ITEMS OF INTEREST.

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Shots from the Profession.

CARIES.—SOME RATHER EXTREME VIEWS.

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[Extracts from the Journal of the BritishDental Association.]

Caries is a process of disintegration, commencing invariably at the surface, proceeding inward, and due entirely to external agents; enamel and dentine are perfectly passive under this process of disintegration, and manifest neither pathological action nor vital reaction of any kind.*

By pathological action I mean: (1) morbid changes in the tissues induced or produced by the influence of the vascular and nervous system; and (2) morbid changes in the tissues in which vascular and nervous influence may, perhaps, have no share, but which are not produced by external agents. By vital reaction, I mean any change in the tissues not solely induced and produced by external agents.

This definition of caries may be established on anatomical grounds. What concisely are the anatomical characters of enamel and dentine? Enamel is a dense, hard, almost homogeneous mass, ranking in hardness with quartz, mainly composed of phosphate of lime, and containing a mere trace, not more than three to five per cent., of organic matter barely discoverable on solution of the tissue in acid. Bödecker has recently stated that he has demonstrated this organic matter regularly distributed throughout the tissue. His observation has not yet been confirmed, and it seems doubtful whether matter in a state of such extreme tenuity as this is so demonstrable. (Enamel has no vascular or nerve connections.) Dentine consists of a homogeneous calcareous matrix, in which no trace of cellular or other structure can be detected,

* Is not the definition of caries here given too extreme? It allows the tooth no more connection with the vital and circulating system—no more physiological life—than has an artificial tooth. It is only acted on—has no action of its own—cannot have, if it has no life. Are we forcing the definition? We think not, nor the inference to be drawn form it—ED. ITEMS.

ranking in hardness between enamel and the densest bone, permeated by minute tubes not more than 1-4500 inch in diameter. The tubes radiating from the pulp cavity, are occupied by fibrils which, proceeding from the pulp, endow the tissue with sensibility. The fibrils being so minute, their actual structure cannot be demonstrated; but there can be no doubt they are protoplasmic, and form the sole protoplasmic constituent of dentine.

The organic basis of dentine, about 28 per cent. of the mass, is contained mainly in the inner walls of the tubes surrounding the fibrils. It can be demonstrated by dissolving the earthly constituents in acid: it remains as a tough felt, even after boiling in strong muriatic acid. No cellular or protoplasmic elements are discoverable in this fibrous structure.

Dentine is in relation with the vascular pulp which it encloses, but a circumstance should be remembered which is seldom mentioned in this connection, that the vessels of the pulp are not in intimate contact with the dentine; there is intervening, a layer of odontoblast cells, the membrana eboris. The dental pulp consists of vessels and nerve fibers with numerous cells and delicate connective tissue. It contains no absorbents (a fact of some importance;) or at least, none have been demonstrated in its structure.

In the presence of our knowledge of the structure of the teeth, which is not disputed, some recent writers have glibly talked of inflammation of both enamel and dentine; of retrograde metamorphosis of the dental tissues, and of the influence of "vital force," and of "diminished vitality" of the hard dental tissues as predisposing causes of caries.*

What agents exist in the mouth capable of giving rise to the first phenomena of caries? Acid is commonly present in the mouth, capable of slowly dissolving enamel, and starting disintegration of dentine. Anyone can start caries by merely packing a pellet of wool against the gum, between two teeth. After the lapse of a few days the acid secretion caused by the irritating foreign body will have commenced to dissolve the adjacent enamel. Some dentists unfortunately perform this experiment in providing patients with teeth supported by bands surrounding natural teeth.

It was natural for old writers, ignorant of the real structure of enamel and dentine, to look on these tissues as more highly organized than we now know them to be; to speak of their "vitality," to suppose they underwent constant nutritive changes, to identify the phenomena which disease made visible in the tissues with similar effects in more highly organized parts, and to classify these appearances as

* Many certainly talk in this way on this side of the water. What will our friend Atkinson and those of his school say to this?—Ed. Items.

atrophy, gangrene, and inflammation—conditions to which they, perhaps, bore a superficial resemblance.

The most recent investigators who have examined the whole question of caries, are Messrs. Arthur Underwood and Milles. These have been followed later by Dr. Miller.

The more important portion of these investigations consists of microscopical examinations of carious dentine stained with an aniline dye. These examinations have been carefully carried on for several years, and show that in every section observed under an eighth of an inch objective with transmitted light, micro-organisms have been found inside the canals according to the degree of softening and disintegration of the tissue. These organisms consists of micrococci, rod-shaped and oval bacteria, and short bacilli. They are invariable in caries, and the number of sections cut and examined is now so enormous, that the observers feel justified in assuming that the presence of organisms is indispensable to the process of decay. They do not remain like leptothrix on the outskirts of the diseased tissue, but penetrate as far as the disease, and even seem to extend slightly beyond the limits of the tissue recognisable by the unaided senses as carious. Another direction in which these observers have obtained a valuable negative result, is that though a weak acid is able to dissolve out the lime salts from enamel and dentine, the result of such solution is not completely like caries, either in its mode of attack, or in the results. This statement may be verified by experimentally decalcifying a healthy tooth in an acid bath. The enamel is completely destroyed *first* and reduced to a condition in which it can be removed with a paint brush, and the dentine is afterward rendered elastic. The negative evidence is further strengthened by submitting teeth to the action of malic and butyric acids, and even to saliva, under aseptic conditions—*i. e.*, in boiled flasks capped, under the carbolic spray; both the fluid and the teeth having been previously purified. Years exposure in these fluids produced no caries. The pigmentation which takes place in the progress of the disease is probably due to the presence of pigment forming bacteria. With this view Mr. Underwood agrees, and he has already produced experimentally a brown pigment by developing organisms on potato.

Messrs. Underwood and Milles describe the microscopical appearances of carious dentine as follows: The tubes are filled with micro-organisms, which can be seen very plainly when stained with methyl violet or any of the aniline dyes. They appear to penetrate the canals at first in single file, and then accumulating in vast numbers to encroach on the matrix till the canals are so enlarged that often two adjacent amalgamate and form one irregular tube full of organisms. They can be seen in the branches of the tubes; and the microscope discovers

here and there a narrow line of bacteria or micrococci penetrating like the advance guard of an army, beyond the sphere of visible delay,* in tissue which to the naked eye shows no trace of commencing caries. Besides the disintegrated tissues and foreign particles, there is to be found by the microscope in most carious cavities abundance of the peculiar fungoid growth, leptothrix buccalis, similar to that which is deposited on the surfaces of the teeth in all mouths in which the most extreme care is not taken in frequently cleaning the teeth. Leptothrix assumes the appearance of minute threads projecting from the surface of the carious dentine in enormous numbers. It was thought by Messrs. Leber and Rottenstein, that the leptothrix took the principal part in promoting the advance of caries. Leptothrix is a fungus, and Messrs. Leber and Rottenstein in their essay of 1868 classed, probably by mistake, all micro-organisms under that common heading—the general knowledge of micro-organic life being at that period in its infancy.

Examination of carious teeth in various stages of decay demonstrates that certain changes apparently take place prior to actual disintegration in that portion of dentine through which the disease is advancing, and which is situated immediately contiguous to the already disorganized tissue. This altered dentine has a translucent appearance, and forms either a regular zone, or exists in isolated patches round the walls of the cavity. The appearance, which is, however, visible under only a *low* magnifying power, was thought by Magitot to indicate vital re-action, perhaps a natural effort to arrest the disease by calcification of the dentinal fibrils. It is found, however, that a precisely similar translucent appearance is always produced in caries of dead teeth and during the gradual softening of dentine by acid, and to this softening and not to consolidation, the appearance in caries is due; and I believe that Magitot, whose first observations were made many years ago, no longer adheres to his early opinion.

Messrs. Underwood and Milles demonstrate the fact that caries of extracted teeth retained in the mouth as artificial substitutes, is absolutely identical with the disease in living teeth.† Attempting to nearly reproduce in every respect the conditions existing in the mouth—as to temperature and presence of saliva and decomposition products usually found there—they have endeavored to produce caries in extracted teeth by carefully conducted experiments, but state that they have hitherto failed to induce changes in the dentine similar to those occurring in the mouth. They ascribe the failure (which, however, of course does not affect the main issue for which I am contending) to the impossibility of reproducing an exact imitation of all the conditions present in a living mouth—such as flow of saliva, secretion of mucus, and the various physiological processes going on in relation to the teeth.

* Are we sure that imagination does not assist the eye here?—Ed. Items.

† Should not this be farther demonstrated?—Ed. Items.

Dr. Miller, who has published a full account of his work, has followed Underwood and Milles through all the steps of their research, and confirms them in every essential point. Dr. Miller not only holds that decay of extracted teeth retained in the mouth is in all its phenomena identical with caries of living teeth, but he affirms that all the microscopical appearances characteristic of caries may be produced out of the mouth simply by subjecting teeth to decomposing agents, such as are constantly found in the human mouth.

Many other observers, including Mr. C. Tomes, have already confirmed the statement that micro-organisms are invariably present in carious dentine, and have recognised all the principal appearances described by the last cited observers.

Mr. Charles Tomes kindly informs me he considers that the constant presence of bacteria in carious dentine at a depth below the surface, is now fairly established, and this seems to show that they are not merely preying on already disintegrated tissue. In this respect there is a marked advance beyond the stand-point of Leber and Rottenstein, who described the leptothrix only, an organism which, however abundant on the surface, does not dip in far. The facts, Mr. C. Tomes goes on to say, seems to stand thus: micro-organisms play a part in the process of caries, and in their absence it is probable that it could not go on, or that, if it did go on, the results would be different; but the exact share which micro-organisms take is as yet not established. The microscopic appearances described by the older writers were, he thinks, perhaps due to their having seen masses of organisms without recognising them as such, but others, such as the well-known tobacco pipe appearance, though eminently characteristic of caries, remain quite unexplained. He thinks while a substantial advance has been made, there still remains an extensive field for investigation in the exact interpretation, even of appearances which are familiar to all observers. But interpret these appearances as we may, we cannot ascribe them to pathological action; and, as regards the "vital theory," adds Mr. Tomes, its supporters, to be logical, ought to affirm that the process of caries proper ceases with the inflammation and death of the pulp, and that what takes place afterward is something different, its apparent continuity notwithstanding; but none of them, to his knowledge, have ventured to face this difficulty.

On *a priori* grounds, in the light of recent discoveries, it might have been safely reasoned that micro-organisms must be present in carious cavities. The decomposing *debris* must necessarily undergo a process of putrefaction or fermentation. Now our recently acquired knowledge proves that these processes must be regarded as due to proliferation of certain organic forms present in the dust floating in the atmosphere. The admission of this dust charged atmosphere to dead

organic matter, gives rise to putrefaction; if the dust be excluded, decomposition cannot occur.

All these later discoveries lead to a tolerably sure explanation of the progress of caries. These are probably as follows: The enamel is first perforated by acid, or when a fissure or flaw exists this is gradually enlarged by the same agency. The dentine being reached, the organisms find their pabulum in the fibrils of this tissue, in which they proliferate, and destroying these fibrils, penetrate along the tubes. Acid is generated by the organisms, and this assists in dissolving the lime salts of the matrix. In this manner the more organic dentine, is eaten most rapidly, while the enamel, partly dissolved and undermined, either remains as a shell, or breaks for lack of support.

PITS AND HORIZONTAL GROOVES.

DR. L. C. INGERSOLL, KEOKUK, IOWA.

In the discussion following the reading of Dr. W. H. Eames' essay before the Illinois Dental Society on "Defective Enamel," Dr. Ingersoll spoke as follows:

The subject presented by Professor Eames in his very able and excellent paper is too large to be entirely compassed in a discussion on an occasion like this. I can, therefore, but barely allude to several of his points, and pass on to the discussion of the main question, to account for the appearance of horizontal grooves and lines of pits on the labial, and sometimes on the lingual faces of the teeth—including those cases where appears a succession of parallel grooves. Imperfect development of enamel, appearing in spots, pits or wells in various locations on the teeth, I am willing to concede to congential or pre-natal causes; for by the death or atrophy of a cell, or a group of cells, imperfect enamel would result. I shall not deny that suspended development may occur in tooth development, as in various other organs of the body, for we have ample proof in dwarfed limbs and missing toes, fingers, bones, and teeth, and other deformities.

Dr. Eames is ingenious in his theory and, in accordance with it, is able to account for some of these phenomena. But I do not see how he can account for the markings on first molars and bicuspids, nor for all the peculiarities of defect appearing in the enamel of the incisors. My object, however, is not so much to oppose him as to oppose the commonly accepted theory; and to establish another which, in my judgment, will sufficiently account for all observed cases. In this we agree, that the old theory is wrong; and I am glad to find so efficient a helper as Professor Eames in an endeavor to overthrow a theory so universally held by the profession and supported by the teachings of all our dental literature for more than a hundred

years. When the theory of arrested development was once announced, the authority of the man, without demonstration, was sufficient to give it credence. So great was its plausibility that demonstration was not demanded, and in the absence of all other ætiological account concerning it, the theory of suspended development has met with universal acceptance, although to-day it remains, so far as I know, without a single valid argument to support it. The flimsiest evidence of its truth has been received as valid. Let us look at some of these so-called evidences. It is said that the teeth, hair, and nails, having the same histological origin, each shows, at least in some cases, the effect of suspended development so apparent in the teeth, and at the same time. A brief consideration will prove the falsity of such assumptions. It is estimated that the life of nail cells is from four to five months, being less in summer than in winter. The nails being of perpetual growth, all markings of any sort on the nails would be obliterated in a period of a few months. How is it possible, then, that three years after the time when the teeth exhibit their markings, similar markings can be seen on the nails?

How is it about the markings on the hair? Somebody in the long past, looking through his microscope, saw the imbricated condition of the surface, and at once pronounced it a case of suspended development, the same as appears on the teeth. If he had examined the hairs from a hundred heads, and from the bodies of the domestic animals, he would have found the evidence of measles or small-pox in every case. The hair of the cat is represented as a series of truncated or lopped off cones. This imbricated condition, like the overlapping of shingles on a roof, is supposed to represent a period of suspended development.

About forty years ago there was published in New York a small work, giving an account of the formation and development of the teeth, and of various diseases to which they are subject. In this work the author introduces another illustration of suspended development, with results similar to those found on the teeth. The case was that of a cow's horn. He found it with alternating ridges and grooves, which he pronounced the result of faulty nutrition and arrested development. This went, so far as I knew, as unquestioned as the supposed illustration of the arrested development of nails and hair. Suppose some doubter had ventured to ask the author, "How is it that these ridges and grooves never appear till after the animal is three years old?" The only wise answer he could have given and supported his theory would have been, that bovines never *suspend* till after they are three years old. Let us look at the structure of a horn. Its corneous or horn-like layers are also imbricated or overlaping. Up to the third year the outer layer is continuous,

from the tip to the skull. During the fourth year it runs out at the surface, and underneath its terminal edge is seen another layer. And thus, each succeeding year, is brought to view the terminal edge of one of the layers, and between these terminal edges is presented, from year to year, an additional groove.

The strongest and most reliable argument of all is of an historical character—"the mother of the child told me so." It is alleged that, in a large number of cases, in regard to which investigation has been made, the mothers and nurses have confirmed the theory of the investigator that, at the period when certain teeth were receiving their amelification or enamel cells, the child was afflicted with a severe constitutional disease.

You may fix any period during the first five years of the child's life—the years in which the teeth are in the process of amelification—and ask the mother, "Did not your child, at that time or during that year, have some constitutional disease?" and she will be compelled, in nearly every instance, to say "yes;" and that, too, not alone of the child whose teeth are pitted or otherwise marked, but of every child of her's. For see the long list of diseases to which children are subjected at that period of life: Measles, whooping cough, eclampsia, scarlatina, eruptive fever, gastric fever, scald head and a long list of exanthematous or skin diseases. With this long catalogue of diseases during childhood, it is scarcely possible for an enfeebled child to pass a single year and escape all. Hence, any mother could truthfully respond in the affirmative as to the happening of some constitutional disease during any assumed period that a professional man might name. I say *assumed* period; for with the known variation in the time of development of the teeth of different children, all is guesswork, as to the particular stage of development of any child's teeth before they have emerged from the gum. Yet we are told by the wisest men of our land, and of all lands, in the science of dentology, that these markings on the teeth enable the dentist to tell, with considerable accuracy, the period when there was some constitutional disturbance. This is the same kind of accuracy with which Professor Tice predicted the weather. Turn over the pages of his almanac and you will find, at some specified date, "*Rain in places*." So, if there is rain on that day anywhere on the face of the earth, he evokes all his thermal wisdom and astronomical science to declare that there must have been, at that time, "some *aerial* disturbance;" and when there is any aerial disturbance, there may be rain in places.

Now, how is it as to the testimony of mothers concerning the new doctrine, that these markings on the enamel occur *after* the teeth have cut the gum, and are brought about by chemical decomposition? *All* the diseases incident to childhood do not occur previous to five

years of age. Several of the diseases named are quite as common an affliction between the ages of five and ten as between one and five. I have often asked mothers, when I have been consulted concerning this peculiar condition of the teeth of their children, "Did not your child, at the time when these teeth were emerging, have some severe disease which involved the mucous membrane of the mouth?" And I invariably get an affirmative answer. Thus far the testimony on both sides is equal, and therefore no proof of *either* theory.

Should I now get the testimony of observation and demonstration—which is not possible, or, if possible, has never been attempted, concerning the old theory, but which is possible, and has actually been obtained concerning the new theory—according to the amount of this testimony the new theory is established.

Now let us scrutinize the accepted theory a little more closely. It is this, that at an early period in life, while the enamel is in the process of formation, a line of enamel cells, extending horizontally along the labial portion of the tooth, and, in some cases, completely encircling the crown, suspend the process of amelification or the forming of enamel cells which is plainly marked on the fully emerged crown by a groove or by irregularly formed pits at intervals in the same line.

The deposit of enamel is in one continuous sheet over the entire cap of dentine. Why then should there be suspension only in a particular line of cells running horizontally? Why not just as often running vertically? Or why not a suspension of the developmental work of all the ameloblasts of the enamel origin? Still further, why should we not expect to find the odontablasts as well as the ameloblasts affected in a similar manner, and thus find a groove or rather a hollow tube, as it must necessarily be, in the solid dentine entirely encircling the crown in some instances, opposite the groove on the enamel? Why are the marking sometimes on the labial faces and not on the lingual? Now, let us for a moment look at the most puzzling of all questions pertaining to the accepted theory, and that is to account for the appearance of *parallel* grooves at regular intervals, numbering, in some cases, five or six. The reasons sometimes offered are ludicrous. One author introducing a goose quill. The quill illustration given is that a quill has rings round its barrel constricting it, as though threads had been tied round it and checked its filling out at these points to its full size. They say these rings, indicate suspended nutrition and development and were probably caused by irregular feeding; that is, at one time the farmer's corn gave out, and the goose almost starved; then again the fowl would have a full supply, and become sick and lose its appetite from overfeeding, which would result in another ring. Then, in accounting for the alternate

rings and grooves on a cow's horn, they say they indicate the change of nutrition on the recurrence of summer and winter. In the summer the animal is fat and sleek and well nourished, and the whole body develops symmetrically; but in winter the animal's food is changed—has no relish for the dry food, and perhaps is poorly sheltered and cared for, and this causes a suspended development in the horns, and probably in the hoofs too.

Now, what does the dentist say concerning the teeth? In accordance with the accepted theory he says: At this point of amelification the child had scarlatina; at that point whooping cough, when another groove was formed; at the next point small pox; at the next point eclampsia; and so on, through the list of constitution ailments of children that interrupt nutrition. And when it is observed that these grooves occur, in some cases, at regular distances from each other, all that he can say, in accounting for it, is that the child began with fits, and in two months after he had an eruption fever; and in two months after that he had small pox; and at regular intervals thereafter he had some other exanthematous disease, and wound up with a relapse of all he had gone through with, which produced a suspension of development and a loss of enamel over a wide area. If there is anywhere in ætiology anything more ridiculous than this, I should like to have it shown. We will next try to give the true theory.

(*Concluded in February Items.*)

WHY IS IT?

DR. L. P. HASKELL, CHICAGO.

In making full upper dentures, 95 per cent. of the cases, there is more absorption in the region of the cuspids on the left side than on the right. This requires longer teeth and more thickness of artificial gum to restore the contour of the lip.

Why is it? As my work is not on the natural organs, I do not have opportunity for observation as to the condition of the teeth and gums, when all are in place, and at different ages. It may be that condition (lack of development of the alveolar process, and probably the maxillary,) exists in most mouths. If so what is the cause? I can think of nothing but the fact that most people are right-handed, putting the food into the right side of the mouth, biting it off and masticating mainly on that side if the teeth are in condition for it. If this be the true solution then the use of the teeth on that side causes the more full development. Is it so? Who can tell?

LANCING THE GUMS.

EDMUND OWEN, F. R. C. S., SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON.

[Read before the Medical Society of London, November 3d.]

Not many years ago, almost every physician carried a silver lancet case, where now he would carry a thermometor. The lancet then seemed to be used for severing every clinical knot in the maladies of infancy and early childhood, which he was not able to untie.

Steadily has the thin-bladed instrument fallen into disuse. But to sigh over the sepulcher of the lancet and the leech (for they lie together in the same dark tomb), is not to answer the question as to why the gums are now so rarely lanced.

Dr. Combe, in *The Management of Infancy*, remarks that, in the second stage of dentition, the gums are very painful, and marked with a pale or bright red elevation. The infant "snatches at everything, and retains nothing. Nothing pleases him." He regards the process of dentition, for the most part, mechanical. Probably this theory was rather generally held a short time ago: the tooth was on the wrong side of a tough gum, through which the surgeon must help it with his lancet. Even at the present day, the public mind associates dentition with a certain amount of clumsiness or cruelty. How often do we hear: "My children always cut their teeth with diarrhœa, or a large head." Was not the real explanation of this usually to be found in the fact of the child being improperly fed? The obscure troubles often come on just as the infant is being weaned; and from what I know on the matter of dieting, at about this period, I should be inclined to think that the source of irritation is much more likely to be in the alimentary canal than in the gums.

To compare the practice of lancing the infant's gum with that of cutting through a fibrous band or roll of mucous membrane which is preventing the complete emergence of the wisdom-tooth of the adult, is not, I think, quite fair. It has been remarked to me that it is strange that the molar teeth of the child do not demand help from the lancet; and that the sharp edged teeth are those which are supposed to stand most in need of help. This fact is suggestive.

Dr. Billiard remarks that, if all the authors had written on the aberration of the process of dentition should be recorded, an extended chapter of absurdities would be the result. And, quoting Guersant, he says, "most of the diseases of infancy have been attributed to teething. The difficulty of an accurate observation of diseases at this early age, and the little positive knowledge we possess in this department of pathology, have contributed greatly to the establishment of this opinion."

There is one special trouble which is apt to be associated with dentition, though not dependent on it, and which is very apt to be overlooked by the practitioner who is inclined to regard the eruption of the teeth as a morbid process: that is, the early stage of infantile paralysis. We cannot foretell the on-coming of the paralysis, when summoned to attend a young child with obscure feverish symptoms; but we should not refer all the symptoms to the teething. On several occasions when I have been consulted with regard to the later stages of that disease—the wasted or deformed limbs—I have heard the mother remark reproachfully that the doctor assured her that illness of many months ago, was but the effect of teething. I would repeat, dentition is almost invariably a simple physiological process, and that, of the many ills to which tender flesh is heir, few arise from teething, though naturally they accompany it. I would offer a caution, look out for paralysis.

What is the condition which demands scarification? When the alveolus is expanding, the tooth growing, and the enamel advancing, the gum is tough, but were it inflamed, the infant would not delight in having it pressed and rubbed. Is it often red and swollen from inflammation? For years, I have carried a lancet in my card case, but I find no work for it on the gums. Doubtless there are gums in need of scarification. Who sees them? Who lances them?

At the end of the chapter on "Teething," Combe advises, when there is much local or general disturbance, the gum should be scarified with a lancet, and allowed to bleed freely, though not in the expectation of the tooth immediately following; and in the second stage, when the tooth is about to appear, the lancing may be demanded for putting an end to suffering and averting danger. Is this disturbance resulting from dentition often met with now? and, what are the "dangers" to be so averted?—*British Journal Dental Science.*

Saving Pulps—We always feel inclined to say "I told you so;" I was blackguarded (about 1857–8) for putting in a great many pivot teeth. A patient for whom I put in the six anterior superior teeth in 1858, lost them in 1876. My first case was two superior central incisors for a physician's wife. They were put in about 1853, and extracted in 1871. When the dentist came to extract for a full denture, he asked the patient how it was that the two front teeth were saved when the others were decayed. They were the ordinary pivot tooth on a hickory pin. Dr. J. Taft filled a pulpless tooth for me 39 years ago, and although the crown is gone, the root still does service.—GEO. WATT.

DIFFICULTIES DURING DENTITION.

DR. AMBROS MORRISON, NASHVILLE, TENN.

There are no two factors so productive of difficult dentition as the ingestion of improper food and the foolish habit of drugging infants with opiates and anodynes. Opium, in any form, is peculiarly deleterious to the young child. The nervous centers of the child are exquisitely sensitive to the impressions of this drug.

The nervous system of the child is undergoing rapid development. During the first seven years of life the brain doubles itself in size and weight. This organ is exceedingly vascular, and in its highly exalted condition is keenly susceptible to all impressions, especially to the physiological influence of opium, whose primary effect is to stimulate and excite it.

In addition to the toxic effect of opium on the nerve centers, it diminishes all the secretions except that of the skin, and produces loss of appetite, inordinate thirst, constipation, etc. The dry mouth of the child, loss of appetite, nausea and vomiting of food, may all be the result of the quieting dose administered by the mother, or ignorant nurse.

Paregoric is usually considered by mothers and nurses as a very simple medicine. As much as one-half teaspoonful or more is not infrequently administered to an infant fifteen months old; but they give with each one-half teaspoonful the equivalent of one-eighth grain of opium, not to mention the other poisons—alcohol and camphor—which enter into the composition of paregoric.

We call attention to the fallacy of supposing the diarrhœa occurring during the period of dentition, to be due to the reflex irritation produced by the erupting teeth. The teeth do not lacerate or pierce the gums, but the superimposed tissue is removed from the approaching tooth by the process of absorption.

The diarrhœa incident to teething, occurring usually during the hot months, may more properly be ascribed to the debilitating influence of the extreme heat, as it is generally absent during the colder months. It is at least equally admissible to attribute the diarrhœa to the ordinary causes of such derangements acting on the body rendered for the time peculiarly susceptible to injurious influences. Looseness of the bowels is not a necessary concomitant of teething, but is due to an inflammatory or catarrhal condition of the intestinal tract and should be treated accordingly.

The inflammed mouth and coated tongue are generally due to a deranged stomach. The mouth is an oral speculum, which indicates with unerring accuracy the condition of the alimentary canal.—*Dental Headlight.*

THE STANDARD OF WORK FOR THE FUTURE DENTIST.

E. PARMLY BROWN, D. D. S., FLUSHING, N. Y.

The best preparation on decayed teeth for gold building is that which removes the most of the damaged tooth material, leaving the most of the uninjured structure. The most durable gold filling applied to this ideal cavity is dense, from the beginning of the starting point to the final finished surface. The immovableness of every piece when laid must be absolute, and density combined with cohesion must be sufficient everywhere to permit its being used for years without failure. The requirement of density on its surface must be sufficient to permit the smoothest finish and the permanent retention of its artistic contour, while the margins of gold where the tooth structure and filling join must be sufficient to keep an unbroken edge.

The best preparation of the margin of the cavity for the tooth margin is that which is the farthest from forming a sharp edge or acute angle, so as to prevent crumbling during the operation, or by usage. The best gold margin which is to join this tooth margin is that which prevents a feather edge. As these margins of different substances must always be in contact, the one that needs it most should be given the obtuse angle. This is the enamel which is of a brittle nature. The gold can take an acute angle.

The best completed filling is one that is truest to nature, and permits usefulness and comforts, and prevents future decay. This means a thorough contour restoration. The filled grinding surface must have a close occlusion with its antagonizing tooth. A filling on the approximal surface, by close knuckling of the gold to its next-door neighbor, must prevent the crowding between the teeth of food, which destroys the inter-dental portion of the festoon of gum, gives pain and invites decay. The close contour approximation also prevents the teeth coming in contact. Of course, such contour work when improperly done may break down; but this is preferable to insidious decay invited by faulty filling.

The shape and capacity of the dental arch is that which is truest to nature. The best gold is that which can be worked the most easily, rapidly, and perfectly—a good working cohesive foil.

The highest type of appliances to produce the best mode of working gold is that which will accomplish the best results in the shortest time, with the least pain to the patient, and the most comfort and profit to the operator. The hand mallet that necessitates an assistant, and at best works slowly, is objectionable. A plugger propelled by the foot does not give the range of free action of one operated by force independent of his exertions. We should be able to start or stop the plugger, at will, by a simple movement of the finger on the hand piece.

A water power is good. The electro-magnetic plugger is good. The battery requires only about ten minutes' attention and ten cents expense per week. When we become used to the battery and plugger we have no better assistant in our work. The gold works kindly under its influence, and is made as solid and strong at all points as is required, while the patient objects to it less than by any other mode. Any system of filling is defective that does not facilitate thorough anchorage and condensation, or is liable to result in weak margins.

The Herbst rotary method of inserting gold permits only one of these things; it does what the old hand pressure did precisely, only in a different way: its fillings are well anchored within the weak walls of the margins of the decay. But the Herbst method necessitates a matrix in many approximal fillings, which is a great objection. That Herbst performs these operations skilfully and far superior to the dentistry practiced about him in Europe, I do not doubt; but the attempts to show its beauty in this country at clinics by its advocates, have been lamentable failures.

This rotary method of placing gold in teeth, I am happy to say, as an American dentist, never could have had its birth in this land. While in Europe it is above the average work; here it is no better than any good dentist should do without it.

I invite Herbst, or anyone able to represent him, to meet me in a friendly contest of the merits of his *modus operandis*, as compared with that laid down in this paper. I will meet him in New York or Europe. I will operate on the mouth of a dentist who needs several days' work performed; he to have a similar case. We will work for several consecutive days before an audience of dentists, and let the audience decide. If the gold building principles of Atkinson, Varney and Webb fail to give the better results, Herbst will triumph.

The death of the Ohio Dental Association is a warning to other State societies to be occupied less with illegitimate discussions and unprofitable wranglings, and more with important subjects pertaining to the good of the profession. Perhaps it is too homely a motto, but we think it would do good to place over the entrances to all our associations: "Let love be without dissimulation." It would certainly be a good thing to be imbibed with its spirit. Only a few can impart discord to all.

Since writing the above, we receive notice that a new society has taken the place of the old one. May it long live, and, by uniting all he interests of the whole Ohio profession, be useful and prosperous.

A MAN WITHOUT BONES.

The following was sent to the *American Journal of Physiology* by a Philadelphia correspondent:

Hecter Davis lives in the hills a long ride from here. A farmer piloted me to the spot. We knocked at the door of the Davis cabin and the first thing that struck my attention on entering was a middle aged man sitting bolt upright and supported by a rude and peculiar shaped framework. He was introduced to me as Hector Davis. I at once entered into conversation with him and discovered him to be a man of fair intelligence and eager to tell all about himself, in a voice that was as strong as my own. I grasped his hand on first entering, but his fingers all rolled together like a cabbage leaf in a mushy sort of way that made me glad to let go of them. Taking hold of his limbs they yielded to the pressure till they were flattened to twice their proper width. The only indication of bone was his skull, which, while pliable almost as sole leather, still offered a kind of protection to the poor fellow's brain. His neck was as limber as a dish-cloth, and when his head was released from its support, which was something similar to the contrivance used in photograph galleries, it rolled helplessly about on his shoulders like a foot-ball. His arms dropped at his side, but with the aid of the muscle he was enabled to partly raise the forearm although the hand curled over limply and gave the whole, a sort of zigzag shape. He shuffled off his slippers and requested me to step on his foot. I did so and it at once spread itself till it looked as if a railroad train had passed over it. It slowly resumed its natural shape, but it was fully a half hour before he was able to get the foot in his slipper again. "Perhaps you would like to tie my leg in a knot?" he suggested. I found no difficulty in performing this feat, while my friend accomplished the same with the other leg, and after we had also tied knots in both arms he presented a very knotty problem, indeed.

While his body was assuming its former shape I learned from his old spectacled mother, who had sat during all these proceedings knitting in her rocking-chair, that Hector, who was forty years old, had always enjoyed excellent health and provided well for her till the beginning of his peculiar affliction two years ago. He first observed a softening of the bones of his toes and this rapidly spread to all parts of his anatomy, though beyond making him helpless he never experienced any inconvenience from it. All his vital organs performed their functions properly and she believed he would live to good old age. She had a younger son, then in the field at work, who assisted her in handling him, and altogether they got along quite comfortably.

While the above case is quite interesting to the general reader, it is no mystery to the physician, as it is a case of simple osteo-malasia, in which the phosphates of lime fail to be deposited and give the bones their characteristic properties.

PROCEEDINGS OF THE PENNSYLVANIA DENTAL SOCIETY.

OPERATIVE DENTISTRY BY DR. A. G. BENNETT, PHIL'A.

[Reported for the "Items of Interest" by Dr. Wm. Trueman, Phila.]

The Doctor suggests, that in preparing a cavity, as far as possible those portions of the walls formed by the enamel should be made to conform to its lines of cleavage. Where this cannot be done, they should be beveled outward at an angle of from twenty-five to thirty-five degrees almost its entire thickness; the softer the teeth, the greater the necessity of this precaution. He thinks the neglect of this is often the cause of broken down margins around fillings. Although the enamel borders may seem strong, if the line of cleavage is undercut, as it may be in many cases where the walls are straight, the enamel is apt to give way at this point, and render the margin imperfect. He suggests this could be studied by working upon a tooth that had been some time out of the mouth and was perfectly dry, the lines of cleavage being more readily demonstrated then, than in a tooth in its normal position and condition. He recommends that the enamel edge should be carefully polished in all cases before commencing to fill. He prefers grooves to retain the filling, only using retaining pits as a convenience in starting, and recommends the use of alkalies, antiseptics, or local anæsthetics, in the cavity where the condition of the tooth calls for them. In frail sensitive teeth, he protects the dentine from contact of metallic fillings by a non-conductor. He thought much of the harshness complained of in cohesive gold was due to overheating in annealing, and over hammering; and that if care was used in annealing, and convex points with fine transverse serations used in filling, the gold could be packed solidly and accurately, and uniform density with perfect welding more certainly secured. Much has been said and written about moisture tight fillings, but excavating with the oral fluids entirely excluded shows clearly, that all the dentine is not "as dry as dust," and probably the moisture around a filling, in a soft tooth at least, may be entirely internal.

On the approximal surfaces of molars and bicuspids, he preferred to make a wide seperation, and then restore the natural contour of the tooth—by this means he got rid of weak edges, and removed the margins of the filling to a point easily inspected and kept clean. Contour is really, separation made permanent—all the good of separation is obtained without its evils.

The weakest point of approximal fillings is always the cervical walls—this he thought was owing in a measure, to the difficulty of properly preparing them. Quite frequently the engine cannot be used, and often when it is, it does not leave as smooth and level a surface as desired. He has devised several instruments to more readily

reach this point. They are somewhat like a hoe excavator—with a wide cutting edge, so shaped, and bent at such an angle with the shaft, that it is brought to bear upon the work very much as is the chisel of a carpenters plane, and on this account it makes a smooth clean cut, and can be made to follow the entire cervical border with one continuous sweep. The dentine at this point is usually soft, and requires a cutting tool with a thin edge brought to an acute angle. He exhibited several instruments, and they no doubt will accomplish the work well, and can be used effectively in a large proportion of cases. By modifying the cutting edge, he finds them useful in beveling the enamel also. He recommends using at this poins, soft gold when the cavity is quite accessible; in other cases prefers tin, or amalgam, the latter for all deep cavities.

A TOOTH KEPT DRY CONTRACTING.

Dr. Gerhart suggested that when the rubber dam was on for a long time, especially when the hot-air syringe was used and the tooth became perfectly dry, the tooth contracted owing to the loss of moisture; the filling being put in while the tooth was in this condition would not fit as accurately when the tooth returned to its normal state. This gave rise to a long discussion—some contending that no change took place, others that the tendency would be to make a more accurate fit between the tooth and the filling, and others again, that this change, though slight, was a source of danger and the cause of failures.

Dr. William H. Trueman related a case where he had built up a tooth with the electric mallet, building the gold around the remaining portion of the tooth. Some months after, the root was split by violence and had to be extracted. The gold and the portion of the tooth removed were firmly united, and after laying in the instrument case six or eight months there was no change; they were so dove-tailed into each other that they could not be separated without fracture. They remained some twelve months more, almost forgotten, when they were again examined; the contraction was now so great that they fell apart. This demonstrates that when the dentine and enamel become perfectly dry, there is a very perceptible contraction; but in this case it must have been about a year before it was noticeable. He did not think it possible for any material change to take place in the mouth, during the short time the rubber dam would be on, under any circumstances.

Dr. Darby thought the use of excessively cohesive gold, which is so apt to bridge and not pack down solidly at the walls, was more likely to be the cause of the trouble complained of than any contraction of the tooth or change in the shape of the cavity. Except in special cases he recommended a semi-cohesive gold as being more manageable.

Dr. Wingate referred to the old-time methods by which good work was done without the rubber dam, and urged a return to the old practice in those cases where it could be used to advantage.

Dr. Peirce spoke of gutta-percha, recommending the pink in all cases where the filling was concealed. It contains less clay, and seems more durable than the white.

Dr. Darby mentioned "Bevin's" gutta-percha, an article on the market some twenty years ago, but not now obtainable, as the best he had ever known. There are several makes quite good, but none equal to that.

Dr. E. H. Neall considered a good article of Hill's stopping to be the best filling for the approximal cavities in the teeth of children, until the twelfth or fifteenth year. "Premium" stopping, made by Johnson Bros., now sold by the S. S. White Co., he considered the best. He used it in small pieces, heating it on a metal plate, and carrying it quickly to the cavity, and thoroughly packing with a slightly heated instrument.

At the evening session the society elected the following officers:—

President,	Dr. George Elliott,	Meadville.
First Vice-President,	Dr. J. L. Baker,	West Chester.
Second do.,	Dr. J. W. Rhone,	Bellefonte.
Recording Secretary	Dr. E. P. Kremer,	Lebanon.
Assistant do. do.	Dr. W. B. Miller,	Altoona.
Corresponding Secretary,	Dr. W. H. Fundenberg,	Pittsburg.
Treasurer,	Dr. C. R. Jeffries,	Wilmington, Del.
Board of Censors:—	Drs. William H. Trueman, C. S. Beck, James Martin, Alonzo Boice, P. K. Filbert.	
State Examining Board	(two elected yearly), Dr. S. H. Guilford, (re-elected) and Dr. E. T. Darby.	

Cresson was selected as the next place of meeting.

THURSDAY MORNING, JULY 31.

The following standing committees were appointed:

Executive Committee—	Drs. W. H. Fundenberg, G. L. Robb, P. K. Filbert, E. T. Darby, W. P. Miller.
Enforcement of Dental Law—	Drs. W. E. Magill, J. H. Rhone, William H. Trueman.
Publication Committee—	Drs. S. H. Guilford, E. P. Kremer, C. J. Essig, William H. Trueman, W. B. Miller.
Committee on Legislative Action—	Drs. W. F. Litch, Wm. B. Miller, M. B. Lowery, G. L. Robb, W. H. Fundenberg.

FRACTURED TEETH RE-UNITED.

Dr. Wingate, of Carbondale, exhibited a number of unique specimens—teeth that had been fractured in the mouth, and had united. All but one were from young patients. The exception was evidently an adult's tooth—an incisor—and had been split almost the entire length of the root, and the parts slightly separated. Union had taken place by the same process that fractured bones are repaired, the space being bridged over, except at one point, where an opening existed communicating with the pulp chamber—and this defect, no doubt, caused the loss of the tooth. One of the others had attached to it a bony process, starting from about the point of fracture (the fracture had been a transverse one, about where the crown and root unites), and at right angle to the tooth about the sixteenth of an inch, it then curved abruptly down, and was, perhaps, a fourth of an inch long. Evidently when the injury took place a fiber, or shred, of perieostium had been torn off, and had produced what the doctor, facetiously, termed a "pig-tail." He had some six or eight in all; they were all so very much distorted in shape that their extraction was a necessity. He was unable to give their history beyond the fact that their presence becoming a source of irritation they came to him for relief. The doctor has practiced a long time in the mining regions of Pennsylvania, where a large number of lads are employed in the coal mines, and are constantly exposed to accidents of various kinds. While in the coal mine we had an illustration of the risks they run:—While a train of empty cars—such as are used to carry the coal from the distant workings to the shaft—was passing, drawn by mules and going at a rapid rate, a party of lads employed in the mine rolled over the sides and threw themselves alongside of the track; the danger of such an acrobatic feat will be understood when we say, that there was scarcely eighteen inches between the top of the car and the roof of the mine, and but little more between the side of the car and the wall. They evidently were used to it, as all landed *standing*, and enjoyed our surprise at their sudden and unexpected appearance. A very little miscalculation would be likely to cause a severe blow on the face. Probably the doctor was right in considering the specimens he had, the result of "skylarking."

MIXING AMALGAM.

Dr. William B. Miller exhibited an arrangement he had devised for mixing amalgam. He had been in the habit of mixing it in his hand, but fearing that a feeling of uneasiness he had in his arm might be due in some way to the mercury, endeavored in the device to imitate, as near as possible, the palm of the hand and a finger. He took a block of rubber, such as stationers sell for erasing lead-pencil marks,

and, securing it in the lathe, first with a chisel, and then with a cloth wet with chloroform pressed against it while it was revolving rapidly, moulded it into the shape of a small mortar. The edges were then turned till it fitted tightly in a rubber case, such as is used to cover the magnet of a telegraph sounder. To the other end of the case he fitted a flat disk of glass, filling the space between them with plaster; on this he mixes the phosphate and other cements. For a muller, in mixing amalgam, he uses the rubber tip of a lead-pencil. He thinks that the soft rubber takes hold of the amalgam better, mixing it more thoroughly and quickly than a porcelain mortar. His method of using it is as follows: He adds to the filings enough mercury to make a very soft paste, placing them in the rubber mortar together, and thor oughly unites them, using the rubber tip as a muller. To remove the excess of mercury he uses an amalgam carrier, consisting of a tube, one-eighth of an inch in diameter, in which a piston is so arranged that when pressure is made upon the top of the instrument it descends in the tube. When all is ready the tube is filled with the soft amalgam by pressing it into the mortar, it is then rested against the side of the mortar and pressure made on the piston, this forces out the surplus mercury—the amalgam may be made very hard if desired. It is then carried to the tooth, and pressure on the piston lands the amalgam in the cavity. He considers this more convenient than the usual method, as he can regulate the condition of the amalgam to the requirements of the case.

Fleer & Co., of 1123 Arch street, Philadelphia, exhibited a mouth-glass, so arranged that when the glass is worn out or injured, a new one may be inserted in a few moments by unscrewing a ring which holds it in place. It also permits a plain and magnifying glass being used in the same frame. The cost is three dollars, including five extra glasses. The plain glasses are supplied at a cost of about forty cents each. The idea seems a good one, but we suggest, that the size they have adopted—one inch in diameter—is far too large; half that, or five-eighths of an inch, would be a much more convenient size.

THE FOLLOWING are resolutions passed by the National Association of Dental Faculties:

Resolved, That we recommend that three years' study of dentistry, including attendance on two regular courses of lectures, be required of students previous to coming forward for graduation from a dental college.

Resolved, That a preliminary examination be required for entrance to our dental colleges; such requirements shall include a good English education. In case of any applicant failing to pass a satisfactory preliminary examination, the other colleges of this association may be informed of the fact.

Resolved, That a candidate for matriculation who presents a diploma from a reputable literary institution, or other evidence of literary qualification, shall be admitted without further examination.

Resolved, That we agree to adopt a graded course of instruction and an immediate examination, which course of instruction and examination shall be conducted as the faculties of the different colleges represented in this association may deem proper.

We recommend that the following subjects and arrangement be adopted by the colleges of this association, viz.:

First Year.—Anatomy, with dissections; physiology, histology, chemistry—didactic and practical; mechanical dentistry.

Second Year.—Review of junior year studies; pathology, surgery, materia medica, therapeutics, and operative dentistry.

CHEMISTRY.

WM. H. TAGGART, D. D. S., FREEPORT, ILL.

[Read before the Illinois State Dental Society.]

Possibly there is no branch of the natural sciences that has more of the mysterious connected with it than chemistry. The various objects which constitute external nature present to the observer an infinite variety of quality and circumstances. Some are brittle; others are elastic and tough. Some natural objects are endowed with life; others are lifeless; they may be moved, but do not move themselves. Some bodies are in a state of incessant change; while others are so immovable and unchangeable that they seem to be everlasting. In the midst of this diversity of external objects, where lies the domain of Chemistry?

When air moves in wind, when water moves in tides, or in the fall of rain or snow, the air and the water remain air and water still; their constitution is not changed by the motion, however frequent or however great. A bit of granite thrown off from the ledge by frost, is still a bit of granite, and no new or altered thing. If a solid bit of iron be reduced to filings, each finest morsel is metallic iron still, of the same substance as the original piece, as will appear if a piece be sufficiently magnified under the microscope. The melted fluid lead in the hot crucible, and the solid lead of the cold bullet cast from it, are the same in substance, only differing in respect to temperature. In all these cases the changes are external and non-essential; not intimate and constitutional. They are called physical changes, and do not change the composition of the molecules, and, therefore, do not change the nature of the substance acted on.

When iron is exposed to the weather it becomes covered with a brownish coating, which bears no resemblance to the original iron, and if exposed long enough, the metal completely disappears, being

changed into this very different substance, rust. So, too, the fragment of granite broken from the ledge, exposed for centuries to the action of air and rain, becomes changed, and after a time could not be recognized as granite. All these changes involve alterations in the intimate constitution of the bodies which undergo them; they are called "chemical changes," and do affect the nature of the substance.

To show, in a single experiment, a physical and chemical change, I have made a solution of calcium chloride in water, which makes simply a physical change; I pour with it a small quantity of sulphuric acid, another physical change, for it simply divides the acid; but the moment the two substances unite, we have a complete change in the nature of the substance, or chemical change, and, as you see, the two transparent fluids are changed into a white solid, and have formed a substance in which you can neither recognize calcium chloride or sulphuric acid.

Mixtures of two or more substances may be formed by mingling them in all conceivable proportions, but a compound formed by chemical action consists of certain invariable proportions of its constituents. Thus, oxygen and hydrogen may be mixed in any desired proportions, but they will unite to form water only in the ratio of one part oxygen to two parts hydrogen. When iron rusts, the oxygen of the air combines with the metal at the rate of three ounces of oxygen to seven ounces of iron. No chemist can make three ounces of oxygen unite with six ounces of iron. In a mixture the constituents are said to be free; in a compound they are said to be in combination.

Possibly a greater proportion of our success as dentists, in treating the cases as presented to us, comes from thorough cleanliness. Another large item of our success lies in the cleanliness of our offices and persons, and as water is the type of cleanliness, it may not be out of place to show the composition of this most abundant and useful article; at the same time this will show you what is meant by the chemical symbols. In the first place, we will take the water, and ask of what it is composed. In this case I shall use electricity as the key to open it up. By means of electricity the chemist is enabled to decompose almost every known compound. I have here an ordinary bichromate potash battery, the poles of which are connected with this vessel containing water, with a few drops of acid added to make it a better conductor of electricity; over the poles of this battery I place two test tubes, to collect what is given off. [Experiment.] You see that one pole has generated twice as much gas as the other. Now, if I take this larger volume of gas and place a lighted match in it, the light is immediately extinguished, showing that the gas will not support combustion, but it takes fire and burns itself, showing that it is different from air. [Experiment.] This gas has been named hydrogen. The other gas, if

treated the same way, not only supports combustion, but increases the flame, showing it to be different from air and the other gas H, and one volume only was present to two volumes of the H, showing the composition of water to be H_2O. This decomposition was produced by what is called "electrolysis." Now, if we can form water again out of these two gases, it will be conclusive proof that this is the composition of water. If these two gases were mixed together again and ignited, we would have a violent chemical combination followed by a loud report, and a drop of water would be the result. This can be shown in a crude way by burning H in the air as in this experiment. I form the H gas and light the small flame, and over this hold a glass tube; the musical tone made is caused by minute explosions as the hydrogen unites with the oxygen of the air, and you see the tube is covered with moisture, and a drop of water forms.

As water is composed of H_2O, it is a very easy transition to come to that much talked of compound peroxide of hydrogen, which has for a symbol H_2O_2, or one more atom of O, or in other words, oxygenated water. This substance in the pure state is a syrupy liquid, having a disagreeable metallic taste, somewhat resembling tartar emetic. When taken into the mouth it causes a tingling sensation, increases the flow of saliva, and bleaches the tissues with which it comes in contact. It is a very unstable compound, and even at ordinary temperatures is decomposed. The dilute substance, as we use it, is, however, more stable and can be boiled, and even distilled, without suffering decomposition. Substances containing sulphur are decomposed by it at the expense of half its O. Its therapeutical action in the treatment of alveolar abscess has been explained in this way: "When the peroxide of hydrogen comes in contact with pus, the extra O it contains is liberated so rapidly that the hydrogen and sulphur of the tissues immediately combine with it, resulting in H_2SO_4, or sulphuric acid in small quantity, sufficient to glaze the surface of the pus-producing area, thus affording an opportunity for the exuding protoplasmic material to organize into new tissue. The remaining unsatisfied atoms of O quickly distend the pus sac, and force the contents through the root or fistulous opening."—(HARLAN.)

To show that these chemical changes do take place, I have made some sulphureted hydrogen (H_2S), the principle disagreeable substance found in pus or in the decomposition of albuminous substances, and to this I add the peroxide of hydrogen H_2O_2, and test the product formed, and find it to be sulphuric acid.

THE reason some dentists, who at first are ignorant, clumsy and uncultured, finally pass men of genius, is, that their very defects necessitate that persistent study, industry and carefulness which bring the highest type of a workman.

DENTAL NOMENCLATURE.

EDITOR DENTAL REGISTER.

The different teeth have different names, as the incisors, the molars, the bicuspids, the cuspids. To some of them, however, names are frequently given of doubtful propriety. The cuspid teeth, both superior and inferior, are often called *canine* teeth, simply because they approximate the form of the dog's tooth. This is certainly faulty for a distinctive name, as many other animals have teeth quite as pointed as those of the dog. The word cuspid means a point, and when applied to a tooth means a pointed tooth. No other word can better designate this tooth. "Eye teeth" and "stomach teeth" are unwarranted by the forms of the teeth, or by any relation they have to the parts referred to in these names.

The first permanent molar is often called the "sixth-year" molar, and sometimes the "six-year-old" molar, the latter being a crude expression that no one of just taste can tolerate.

There is no more propriety in thus designating these teeth than in calling the second molar the "twelfth-year" molar, or the third molar the "eighteenth" molar, or in naming the bicuspids according to the years of their eruptions. The appellation "first permanent molar" is clear and distinct, and cannot apply to any other tooth; let this, then, be the name by which this tooth shall be designated. The third molar is known by several names. Some think it entitled to the Latin name, and hence call it "dens-sapientæ," and others are content with the same name in English, and call it the "wisdom-tooth." The better and more distinctive name, however, is the third molar; this is clear and understandable, and quite sufficient for its designation. Multiplicity of names tends to confusion. Call "the fang" a *root.*—*Dental Register.*

Lot's wife and the pillar of salt story may have a practical illustration, and some of our little boys and girls may be turned into pillars of stone if what the New York *Tribune* says is true. It asserts that there is a large and flourishing industry going on of turning stones into candy. The stone is quarried in the Rocky Mountains, ground into soft white powder in the mills, and shipped to New York for admixture with family flour—its weight makes it useful here—or more commonly with cheap candies. Terra-alba, it seems, used to be the favorite ingredient, but this powdered rock has rapidly increased in popularity, and a case of some New York child who is fond of cheap sweets literally turning into stone will soon be heard of.—*The Rambler.*

[The authorities of New York are just now seizing large quantities of this adulterared candy. During the latter part of December, it is estimated they confiscated and destroyed five tons.—Ed. ITEMS.]

A GAS FURNACE FOR FIRING DENTAL ENAMELS AND PORCELAINS. CAUSES OF "GASING" IN FIRING TEETH.*

WILLIAM HERBERT ROLLINS.

The two subjects are combined because by means of the former I have been able to discover the latter.

The furnace shown in figures 1 and 2 will give a heat from a dull

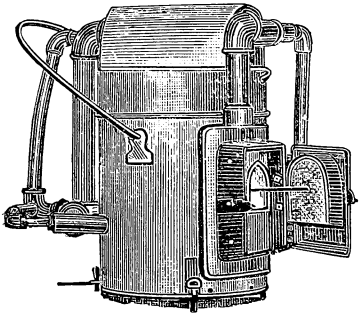

FIG. 1.

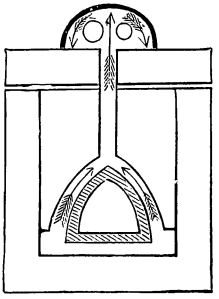

FIG. 2.

red to a light so bright that an object in the muffle is invisible. Looking at the figures will enable any dentist, by means of the following brief description, to make a similar one: The furnace consists of a cylinder of sheet iron ten inches in diameter and eleven inches high. It has a handle and an iron door. The cover is a similar cylinder, two inches deep. Both are lined with porous fire-clay, two inches thick. The furnace walls have four holes in them. Three of these holes give passage to three tuyeres, the fourth is for a No. 3 muffle, the mouth of which is closed by an iron door lined with asbestos. The door is perforated by a platinum tube, through which passes the platinum trial rod, with a small spoon end for the test piece. This rod can be withdrawn from time to time to look at the test piece. At the front of the furnace are two iron tubes, one for gas, the other for air. These pass under the fire-clay arch, where they are brought to a yellow heat by the waste gases as they escape through the slit in the top of the furnace. (See fig. 2.) Each of these tubes divides into three branches at the back of the furnace where the gas tubes enter the air tubes. In this way three double tuyeres are made, their mouths corresponding with the holes in the furnace. This arrangement is necessary, for if the heated air and gas are allowed to mix before reaching the mouths of the tuyeres these would be destroyed by the intense heat. Figure 2 is a perpendicular section of the fur

* Abstract of a paper read before the Society for the Advancement of Oral Science.

nace. The course of the heated gases is indicated by the arrows. A similar furnace for dental metallurgy will be described in another paper.

Any one familiar with the metallurgy of iron will see that the principles which have been used were discovered long ago. The hot blast was invented by Neilson in 1830. Siemens used gas as a fuel, and heated both this and the air. Using the waste gases to heat the blast is not new. Naphtha has been used to increase the illuminating power of gas, and knowing this, its value for increasing the heating power would occur to any one. Porous fire-clay was known in Strabo's time, though T. Fletcher, with his usual capacity for adopting other men's ideas, has recently re-invented it.

Though the principles were discovered long ago they had never been used together, and by this new combination I have been able to do what has never been done before in a gas furnace: produce heat enough to bake teeth, and this, too, in so short a time as forty minutes from the time the gas is lighted.

CAUSES OF GASING IN FIRING MINERAL TEETH.

In my first experiments for making enamels for filling conspicuous cavities in teeth, difficulty was sometimes found in making the enamel base of a pure translucent white. As the result of somewhat elaborate tests it was found that the gray or green tint was due to the reduction of some of the lead oxide. A similar difficulty was encountered when the enamel base was fritted with the metallic oxides necessary to give it the shade of the teeth. Here the oxides themselves were reduced.

It, therefore, seemed probable that the so-called gasing in mineral teeth came from a similar cause.

Many experiments and analyses were made to test the matter, and though it is not worth while to give these in detail, one experiment, which is easily tried, will be mentioned: After having made a furnace like the one described, light the gas and open the air valve. When the heat is high enough, put an unbaked tooth into the muffle. When taken out the color will be pure. Now diminish the oxygen by partly closing the air valve. Put in another unbaked tooth. When this is removed it will be found gased. The same result will follow with the air valve in the same position as in the first experiment if the supply of gas is increased. In experiments with dental enamels and porcelains it is advisable to have a slight excess of air in the furnace. Where the color used, as, for example, platinum, yields the proper tint in the metallic state, this precaution is unnecessary, as in these cases the color has no oxygen to give up.

Remember a noble mastiff does not mind the barking of curs.

TREATMENT OF NASAL TUMORS.

PROF. J. B. BUIST, NASHVILLE, TENN.

Before outlining the general surgical means adapted to the radical cure of the different classes of the nasal and antral tumors, it may be well to say, that though none of these growths are self-limited—having no tendency in themselves of cure—it has happened that by some accidental means gangrene has been set up and consequent sloughing and discharge has occasioned a spontaneous cure. This occurrence in any variety of these tumors is exceptional. The application of salves, ointments, powders, and washes have been tried from time immemorial. In the case of the gelatinous growths, astringents may give temporary relief, by contracting the mass of the tumor and giving better breathing space, but none of these applications are worthy of the surgeon's consideration. No temporizing or partial operation will do. Nothing less than a total extirpation of the mass demands the surgeon's attention.

A thorough examination of the nasal passages is to be made in all classes of new growths, both for correct differential diagnosis and preparatory to operative measures. This is to be accomplished by inspecting the canal under a strong light from the reflector at the forehead of the observer, the orifice being well dilated with a speculum—the direct rays of the sun not being available for this purpose. At the same time a silver probe is made to pass round the growth to discover how many there are, and the location and origin. In addition, much information may be elicited by posterior rhinoscop, which will give us a view of the posterior surfaces, and specially the position of their attachment. Another means at the disposal of the examiner is the index finger, passed behind and round the soft palate, as we have already suggested, in cases of naso-pharangeal tumors, and it will furnish us more knowledge than all other means. The removal of the gelatinous polypi is most generally affected by avulsion, by means of forceps of suitable size and shape, passing the instrument closed, up the canal and opening the blades so as to let the polypus fall between them, and then seizing the stem as near as possible to its origin, we violently twist and pull it away—sometimes it can only be torn away by piece-meal and at several sittings. Another method now in use is the wire snare—a small ecraseur in principle. Either the instrument devised by W. E. Jarvis, of New York, or that of Mr. Hilton, of England, for this special purpose, are neat and convenient, and enables the surgeon to remove the growths with the least possible suffering to the patient. The loop of wire is made large enough to be passed over the tumor and being carried up to the attachment and then drawn tight by a screw at the handle and the pedicle severed. This instru-

ment can sometimes be directed by the eye, under good light, in the nostril. In practice, however, it is often difficult to place the wire loop over the polypus and be certain it is close to the insertion. After either method it is a good plan to use the curette or scoop by which we may scrape away any remains of the pedicle and insure against a reproduction. There is no after-treatment required in these cases, although some surgeons are in the habit of blowing up the nose astringent powders.

In regard to the removal of the fibrous polypus, we have already indicated the manner of proceeding ; namely, to open the nasal orifice by incisions above and below, and draw the flap well to one side, so as to get all the room possible. Then, when the location of the pedicle is discovered, we may either pass an ecraseur wire of sufficient strength round it so as to separate it by degrees, or we may encircle it with a whip-cord ligature, and, after tightening well, the body of the growth can be cut away with knife or scissors, *en masse* or piecemeal, and the stump well touched with nitric acid or potassa-fusa and the ligature allowed to slough away. The incision in the skin being well sutured will unite and leave very little deformity. Antiseptic injections should be used as long as the discharge continues offensive.

As is well known, the antrum of highmore is an empty cavity in the superior maxilla of each side, of irregular contour, and lined with a mucous membrane, an offshoot from that lining the nose. The septum between this sinus and the nostril is a thin, bony plate, and is perforated at one place. Gelatinous and fibrous polypi are of so rare occurrence in these cavities that some authorities even doubt their existence. A cystic degeneration of the mucous membrane has been recognized and described, and which, in the advanced stage, is said to terminate in a coalescence of the innumerable small sacs, resulting finally in a filling of the sinus with a serous fluid, constituting what the old writers designated *Hydrops antri.* Many varieties of new growths are to be found in connection with the upper maxilla and their sinuses, but the only one we have to do with in this article is the medullary, encephaloid or brain-like cancerous neoplasm. It is not infrequent, occurring in persons usually before middle life. Like tumors of the same nature elsewhere, it is vascular, of rapid growth, filling up the cavity to distension, and shooting its prolongations in every directions. It produces prominence on the cheek or raises up the floor of the orbit, forces down or penetrates the roof of the mouth, or absorbing the naso-antral partition, blocks up the nostril.

Its progress is usually attended with great suffering, either of an intermitting neuralgic character, or of steady, throbbing pain. It is generally thought it may take its origin from any part of the antrum

but Mr. Hancock, a high authority, contends it always starts from the sphenoid and base of the cranium and comes forward.

This, like other cancerous growths, invades and blends itself with the adjacent tissues, as well as mechanically interferes with them. As there are no lymphatics in the walls of the sinus or in the skin of the face, we seldom have any glandular enlargements beneath the lower jaws, or in the cervical glands. The general health continues good even to a late period of the malady, a cancerous cachexia being, however, established in the last stage. The direction in which the tumor grows, and its consequent effects, varies in different examples. Sometimes the enlarement in the cheek comes on early, with resulting œdema of the eye-lid and closure of the nasal duct. In other cases the tendency is downward, and the aveolar process is absorbed, and the teeth loosened. At other times the growth will appear first in the nostril, having absorbed the naso-antral wall, and will then be mistaken for a polypus.

Early in July, 1881, Mr. L. D., a gentleman about 28 years old, who, for several years, had been fighting off pulmonary disease, was sent to me by a very distinguished dentist of this city, on account of, as was supposed, catarrhal inflammation of the left maxillary sinus. Some months previously he had a molar extracted from that side on account of pain and loss of vitality in the tooth, and a week before his visit, the dentist who sent him to consult me, removed another, and discovered a communication into the antrum. Presuming the trouble was as suggested by the dentist, I employed injections of iodine, zinc, and carbolic acid, for several days, observing, however, at the end of this time that the patient's sufferings were increasing, and far beyond what a catarrh would produce. I was led to a more thorough investigation. The socket from which the tooth came was in an unhealthy condition. I enlarged it so as to get the end of the little finger some distance, and in doing so felt a soft substance in the cavity of the antrum. Passing a forceps up, I accidentally brought away a fragment of soft friable tissue. This led me to think I had a medullary tumor to deal with. On the 7th of August, assisted by Drs. Richardson and Ewing, and the patient as well under ether as the suspicious condition of the lungs would allow, I proceeded to make an exploratory operation. By this time the cheek had become enlarged and the lower eyelid swollen. By the usual steps, the anterior wall of the antrum was opened, and passing the finger in we found the cavity nearly full of a soft substance that bled quite freely. We then extended the incisions in the skin, and removed over half of the maxilla. Then with a gouge I scooped out the growth, finding it to spring from the sphenoid bone. The parts were freed from all the adventitious structure we could find,

and then we swabbed out with strong nitric acid. The inability of the patient to breathe freely of ether, the loss of blood, and the great agony he suffered, compelled us to be satisfied with a partial removal of bone. Patient recovered from the operation fairly well, but by November 16th his sufferings were renewed. The submaxillary gland of both sides showing enlargement; the nostril was becoming occluded, a general failure of vitality came on, and on the 23d of January, 1882, he died with evidence of general and local cancerous cachexia.

The above case shows how early an opportunity a dentist may have of detecting disease of antrum, as well as how serious and fatal a malady we have to do with.

The following case we transcribe from our note book, and it will illustrate a mistake not unfrequently made—that of supposing a morbid growth to have its origin in the cavity in which we first find it:

September, 1877, I was called to attend Mrs. H., of this city; a lady of about 52, rather spare in flesh, but of fair physical constitution. For six months previously she had been under treatment of an eminent physician for what was thought to be nasal catarrh. On close examination under a strong light, a growth could easily be seen in the left nostril within an inch of the anterior nares. Moving it about with a probe led me to believe it was a fibrous nasal polypus. The passage of air was almost entirely prevented on that side, and several slight hemorrhages had taken place in the few weeks preceding. After observing the case for some days and finding the pain and the difficulty of breathing while asleep daily increasing, an attempt was made to remove the tumor by avulsion. It broke off readily, and the hemorrhage was profuse, so that I only got away a few small pieces. A week later another effort was made with similar result. Between the first and last operation there was evidently rapid reproduction. My suspicions were now aroused that I might have a cancerous growth originating in the antrum. Consultation was therefore requested, and the physician who had previously had charge of the case, was summoned, and also an eminent surgeon. After examination the latter and myself considered it a malignant growth, coming from the maxillary sinus; the other physician dissenting. As the lady declined all surgical interference, the case was left to palliative treatment. She died in a few months after, the tumor increasing rapidly in all directions, accompanied by frequent hæmorrhages.

The prognosis of this class of tumors, if left to themselves, is absolutely fatal, usually terminating in from twelve months to three years from their commencement. If, however, taken in time, they are amenable to surgical operation, and if the bone from which the

tumor springs can be entirely removed, a fair prospect is then had of the patient remaining free from any return. Removal by surgical operation is the only effectual means of treatment, and the earlier in the growth the better the chances for the patient. As early as the end of the 17th century operations were undertaken on the upper jaw, and especially on the alveolus, for tumors and new growths, and down to 1725 the French surgeons in particular often removed large growths and considerable portions of the bone, by gouging them out with the chisel.* It was between the year 1726 and 1730 that the Scotch surgeons, Lizars and Syme and M. Gensoul, of France, placed before the profession some rational and systematic plan of excising the superior maxilla, and a few years later Lister and Wm. Ferguson perfected the operation both in its principles and details. The complete extirpation of the half and even of the entire upper maxilla is. now-a-days, a legitimate proceeding in surgery and is often resorted to.

The *modus operandi*, in a few words, is, first to divide the integument of the face and the upper lip in the median line, and from this an incision around the ala of the nose and up to the inner canthus. If more room is needed an incision is made from the last outward along the orbit to the malar. When the flap is turned back, saw through the juncture of the maxillæ and the palatine bones, also that of the malar and maxilla; and notch with the saw the nasal proceess of upper maxilla, completing the division of these two last points with a good bone forceps. With the powerful "lion forceps" of Mr. Wm. Ferguson, the jaw is to be seized and violently broken away from its connection with the pterygoid process and palate. When loosened, the detaining soft parts are to be cut with a knife or scissors. Hæmorrhage is to be arrested by ligature, actual cautery and stuffing, and the flap of skin restored and neatly sutured with wire and the hare-lip pins. Although an unsightly and usually a very painful operation, it is not often dangerous in itself; and it is astonishing how little comparative disfigurement in the visage remains after cure, even when so large a mass of bone as half the maxilla has been removed.—*Dental Headlight.*

For Frost-bitten Feet, or for Chilblains, a few applications of the following will be found good; ½ oz. each of chloroform and camphor; 1 oz. each glycerine and tr. opium; 3 oz. tr. arnica.

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*Yes, and these operations "on the alveolus for tumors and new growths" were often for "alveolar abscesses" that aught to have been removed simply by the extraction of the teeth or roots causing them. Once a father brought a son fifty miles to me to have a portion of his son's lower jaw removed for a malignant tumor. His physician had sent him on the plea that I had better facilities for such an operation. "A portion of the jaw will have to be sawed out," said he. "Don't be contented with anything less," he added, as he took final leave of them. There had been a running sore on his cheek for many months, and the stench was horrible. The son no sooner took the chair, than I removed the hidden root to which was attached the abscess. "That is all," said I; "you can go home now; fifty cents, if you please." They were astonished. They had put up at the hotel, expecting to stay several days, and I was reminded of the serious character of the case as represented by the physician who had treated it for six months. "Stay as long as you choose," said I; "but this is all that is necessary." And so it proved.—Ed. Items.

BLIND LEADERS OF THE BLIND.

HASKELL, CHICAGO.

It is not strange that so many dentists, specially the younger, dislike to make metal plates, when we see the instructions given in text-books, dental periodicals, and in other ways.

I have just received a pamphlet, issued for the purpose of selling a new vulcanizer (which, without doubt, is an improvement on the old style, if one wishes to invest $200 in a vulcanizer). In this book are instructions in gold work. He says the instructions in text-books are *too diffusive*, which is quite right, for in a text-book on mechanical dentistry, sixteen pages are devoted to "casts and dies." Two pages will cover the ground fully, and make a clearer and simpler method, But this writer gives directions that would be misleading to a student and no help to any others. The whole process is wrong.

In the first place, when will instructors learn from *practice* that Babbitt metal (from a proper formula) more completely fills the place of a dental die than zinc or any other metal? That the process of using it is more simple and more reliable; that two or three dies are not necessary to secure a fit (I seldom make a second, and even then do not make a second *counter die*). If 30 years' constant experience in successfully fitting metal plates with Babbit metal dies, after 10 years' use of zinc, tin, etc., does not demonstrate this, I know not what will.

How much more reliable to shape the model so it will *drop* from the mould than to have to tap it and draw it out with the fingers, marring the mould far more than if it dropped itself.

The writer referred to says: "*Boil* the plate in acid to make it bright!" How much more simple to drop it in cold acid as soon as annealed! And, by the way, an acid dish, made of thick sheet lead, formed over a die, and the overlapping margin cut so as to form a handle, is the best thing in use. He says, "If any zinc or lead adheres to the plate, *scrape it off.*" *Oil* your dies, and there is little danger of metal adhering; if it does, *wipe* it off, as you can readily see it on a bright plate.

Do not hesitate about cutting your plate in front, lapping and soldering, as it will save much time in suaging, strengthens the plate at its weakest point, and there is no possible objection to it. Twenty karat gold is none too fine. It should be made of pure gold, alloyed with pure silver and copper. You will then have a soft plate, easily suaged, and not inclined to spring. Avoid platinum, except in clasp material or backings. If the plate needs additional strength, as in partial cases, put on a quarter-inch double.

As to solder, use the *same karat as the plate*. It is just as easy to

use: yes, more so than a low karat, and of course far better for the mouth. To think of recommending "*14 karat solder on an 18 karat plate*, to be worn in the mouth!" And, "clasp material 14 karat; and, for fear this plate would melt in using the 14 karat solder, recommending the use or platinum to prevent it!" Why, the alloy of clasp material should be platinum always, and the karat not less than 18.

Cut the solder in small pieces, and lay where you wish it to remain, on the pins as well as at the joints, being sure the surface is clean. Then with your case thoroughly heated over the gas, or charcoal, apply the blow-pipe, starting at one end, and running around, you will have smooth work, and no after burring except at the heads of the pins, and for this a small fine corundrum is better than the bur.

TOOTH AND EAR.—OTALGIA OF THE LEFT EAR.

JOHN S. SMITH, D.D.S., LANCASTER, PA.

Miss S., aged 24 years, teacher by profession, general health delicate, anæmic, nervo-bilious temperament, came to me October last for treatment.

HISTORY.

For over five weeks she had suffered a dull, heavy pain in her left ear, at times nearly unbearable; the pain was intermittent. She had resorted to domestic treatment for about four weeks, and subsequently by her family physician who prescribed local and systemic treatment with but little relief.

On looking into the mouth I discovered the first superior molar was broken down, the fangs imbedded in a hypertrophed gum which bled at the slightest touch; the second bicuspid was also partially broken down. A fungus growth occupied the space between the bicuspids and filled the cavity of decay. An examination of the lower teeth revealed a cavity in the distal portion of the crown of the wisdom tooth, extending partially beneath the gum, but there was no pain. I placed a pledget of cotton-wool saturated with sandarac varnish into the cavity to push the gum away from the cavity of decay. I then removed the three fangs of the molar, and the fungus from the bicuspid, and opened into the cavity which revealed a sloughing pulp. Being desirous of saving the tooth, I placed a disinfectant into the cavity, and gave the patient the following antiseptic mouth wash; Phenol sodique 1 part, water 12 parts to be used as a wash five or six times a day. In a week she returned; she had suffered with neuralgia about the jaw and neck, and the ear, and had called in the physician the second time. Her jaw was so stiff, it was with difficulty I could get the mouth open wide enough to examine the condition of the wisdom tooth which I suspected then of doing all the mischief, though still she did not complain of pain in it.

Before she left I succeeded in its removal, and from that time the pain in the ear and neuralgia began to disappear. The soreness in the neck and in front of the ear still continued painful on pressure, which I directed to be washed with soap liniment night and morning. In one week all pain had left. The bicuspid was treated in the usual manner, the pulp canals and crown filled. There has been no trouble since.

DIAGNOSIS.

This case, it will be noticed, resisted all medical treatment directed to the ear, and only found relief by the removal of the primary cause—irritation from the diseased wisdom tooth.

The marked anæmia present, no doubt made the patient more susceptable to the neuralgia. This irritation to the dental nerve was transmitted to the filaments in the tympanic cavity of the ear.

AN ANÆSTHETIC COSTLIER THAN GOLD!—COCAINE $224.00 PER OUNCE.

"Prepared by E—— of Darmstadt. It is obtained from coca leaf. It is used principally for operations on the eye. It deadens the nerves temporarily and thus *supersedes* chloroform." For an operation a four per cent. solution of cocaine is used. Such a solution costs $10 an ounce, and only a few drops are necessary. Cocaine has, however, the same effect on all parts of the mucous membrane, and its use is extending." "If for instance, a small grain be placed on the tongue it will soon produce a peculiar numbness and *deaden any* sensation of of pain."

Now I am deeply interested. Can you give *dentists* more information or confirm the above?—PETER SIMPLE, Dentist.

EDITORIAL REMARKS.

From the few experiments had on the teeth with cocaine, we are led to believe it has virtues. It is only, however, in the hands of the many that its merits can receive sufficient confirmation. Cocaine is heralded as possessing all the wonderful virtues of naboli. We hope, like naboli, it will not disappoint us. As for its price—that is nothing, if only it is efficient. Suppose a dram of a four per cent. solution does cost a half-dollar, what is that? Only a drop or two is said to be sufficient to produce local anæsthesia.

It is almost impossible to obtain it in this country; yet the crystal is the most reliable. Some have made a decoction, others a tincture, of the leaves but with less success.

Anti Natal Marks.—A man fell from a house that he was building and received injuries on his back; he was taken home and his wife who was pregnant at the time helped to dress the wounds. At the time of her delivery the child had the same kind of wounds on its back, and exactly in the same situation.—*Journal of Physiology.*

Chloroform Syncope treated by reversing. Dr. Albert I. Garland relates a case wherein he began to operate on a lady, aged forty-one, for the removal of scirrhus of the mamma. After examination of the heart, which was found normal, they commenced administering chloroform; but the cardiac action becoming very excited, a mixture of chloroform and ether was used. She was some minutes going under the influence, but there was scarcely any struggling, and the pulse was full, though jerky. He had not finished the incisions round the tumor when she suddenly became livid, and the pulse ceased. Artificial respiration was begun, the tongue drawn forward, and strong ammonia applied to the nostrils, without avail. He immediately jumped on the bed, and seizing her legs, raised the body, allowing the head to touch the bed. In a few seconds the color returned to the lips and the pulse to the wrist. Artificial respiration was soon resumed, hot water applied to the region of the heart, and she became sufficiently conscious to speak and to swallow some brandy and ammonia, soon, however, relapsing, pulse and respiration ceasing again. He again reversed, with the same result; but in a short time the syncope returned; and after applying the battery without success, he again reversed, and this time with a satisfactory result, as he was enabled, by the use of the battery and ammonia to establish reaction.—*Scientific American.*

Amalgam.—There are a great many in the profession who cry down amalgam fillings, not because they think they will not save teeth, but because they say that the mercury they contain has an injurious effect on the health of the patient. For the benefit of those who take this ground, and the fact that it comes legitimately under the head of chemistry, I have here a very delicate test for the presence of mercury, either free or in combination with metals, as we find it in amalgam. By taking a solution of nitrate of silver and adding ammonia till it becomes cloudy, and then adding enough more to make a clear solution, and using this as an ink to write with, and placing the paper over the amalgam plug and allowing it to remain in the dark the writing turns dark, showing that the mercury is constantly giving off fumes. I have performed this experiment with an amalgam plug that was in a tooth forty-two years, and it apparently gives the test as well as a younger one, and the beauty of it all is that the patient's health was not destroyed.—DR. W. H. TAGGART.

The Rubber Question has been quite extensively treated by Mrs. M. W. J., in the *Southern Dental Journal* during the last six months. These communications are now embodied in pamphlet. To those who would like to go over this whole subject they would do well to possess this tract.

Editorial.

INTERFERING WITH MORALS.

We sometimes regret that a man's character has anything to do with his business. But, the fact is, a man has to take himself wherever he goes. He cannot separate his work from his manners, his professional acts from his moral atmosphere, his skill from all those qualities of healthy spirit, clear brain, and strong nerve, essential to its application. If the hand that is brought to the mouth of the patient is stained with the filth of tobacco and the clothes saturated with its smoke; if the breath is loaded with the fumes of whiskey, and the tongue is made idiotic by its poison,—the patient is justly indignant, and has a right to complain. If excess in these narcotics, unsteady the muscles, becloud the intellect, and lower the general tone of the operator, the patient is bound to see what all this has to do with filling teeth; for, certainly, if such habits—as it is their tendency to do—undermine the morals, prostrate the dignity, and ruin the whole character of the dentist, they lessen his ability to do good work, and make association with him disreputable.

By moderation and scrupulous care, many dentists use both tobacco and alcohol, in some forms, and yet so hide their effects as always to look clean and prim, and act with the greatest decorum, dignity, and grace. But how many continue thus? Alas, how many become gradually blunted in their sensibilities, careless in their appearances, and indifferent in their respect for public opinion?—and, in turn, as gradually are they neglected, forgotten, left to suffer, to go to seed, by the better class of community.

"If these things are so, why are they not more generally recognized by those personally concerned?" That they are not thus recognised, is, indeed, strange. But if any of us have an evil habit, every one else—our best friends—seems to know it before we recognize it. And, as it carries us down, others seem more cognizant than we are of its effects. It would be more frequently told us, if, from its very effects, we did not become so blinded (and, let us whisper, so determined to persue it) that we are sensitive to reproof. "Let us alone, what have we to do with thee?" is the spirit all evil habits force on us. Though brought to our attention in the most careful manner, we are reluctant even to hear our faults. It is much more agreeable to receive flattery. And the difficulty increases as we hold on our course; for the longer we indulge in an evil habit, and the stronger we are bound to it, the less evil it appears, till, finally, we can hardly credit that "just this" can effect our standing among men, or our success

in business. And yet we are not entirely blind to its character, nor insensible to its effects. There is scarsely one of us addicted to beer, rum, or tobacco who would not flog our boy for imitating us; for we know it is by example these evils are perpetuated. What folly to expect our children to be better than ourselves?

"But why does not the profession speak out on these things?" Can a gagged man speak? How can we expect the profession to mutter a word when the truth would condemn more than half its number? Is this a bright picture?

Yet, some ask, What have these things to do with a man's dental practice? and they would hush every breathing against them. Rather, let those who are convinced of evil doing, stand where truth cannot condemn them. We do not say all are conscious that these habits are evil. We ask pardon of these for forcing such things on their attention. There are some who know them to be evil-many; and it is principally to persuade these to act out their convictions, that we say what we do in the ITEMS. To these, we now say again: Act! Let not the new year roll in on you without finding you all your better judgment would make you. Act, as you know your better patrons would exult to see you act. Act, so that you will not be ashamed of your children imitating your example when they take your place.

Take Notes of Special Cases as they Occur.—At the time it is impossible to foresee how important these cases may become, or how instructive your notes may be. Make a memorandum of appearances, symptoms and history, and the impressions these may give you, and the course you determine on. From time to time note the results and the lessons they have taught you. This will greatly assist you in the management of the case in hand and be of much value in future cases. At the time, the disease so vividly impresses you, you may think it will always be fresh, but memory, even of important events, gradually fades. Sometimes, even while a case is in progress, we may forget some important point in its beginning, unless it is preserved by the pen. If you keep an intelligent surgical and medical record you will be surprised how, ever and anon, you will be assisted in new cases by your history of those similar. Then, too, as experience ripens and success becomes uniform, you will be better able to instruct your fellows.

WE have our *permanent* subscriber. He says, "Send ITEMS till time runs out." Of course the ITEMS will live, but in case the brother sees his end drawing near will he please to leave in his will provision for subscription money, and also name the person whom he expects will live to get the ITEMS "till time runs out."

ARE WE BAROMETERS?

There are certainly some who are so sensitive to the condition of the atmosphere, they can prognosticate the condition of the weather with considerable accuracy. They may not be able to say just how they do it, but they "feel it in their very bones." That is, by an indefinable experience, they have come to recognise that a certain condition of the system indicates a "regular nor'-easter," or a severe thunder storm, or a high wind, or a drizzling rain; or, when others are looking for one of these, they will assert with great positiveness that it is not coming. When but a small boy, my mother used to say she could tell when it was going to rain, for "Tommy was sure to tell of its coming by having the blues." This effect on the spirits of some by the approach of a storm,—moodiness, despondency, irritability—is not a whim, and unless such persons brace themselves against it they will be barometers to the annoyance of themselves and their friends.

How often, with us as dentists, on a gloomy day, has all gone wrong, and our patient has somehow caught our spirit. When the next day brings a bright and bracing air, how smilingly we receive the same trying patient, and how pleasantly she smiles in return! Both of us can now undergo severe nervous strain, with a surprise that on the previous day we could have acted so foolish. Of course, it was foolish, and we could have braced ourselves against it if we had known it was "nothing but the weather;" and we must resist these weather influences or be slaves to them.

This susceptibility to the condition of the weather is still greater in invalids. On the approach of a storm their rheumatism is sure to be aggravated, their neuralgia to give them an additional twinge, and their gout to have an extra snap. Another says, "I knew from my headache it was going to rain;" or, "My lumbago never pains me like this if a storm is not brooding." On such days the physician expects to find his patients depressed and full of all manner of aches. When do dentists have the most patients with toothache? Is it not at the approach of and during stormy weather? "Ah, this only shows that during such weather people are more apt to catch cold, &c." But why? It is not simply the water in the air. There is not as much water in the air at such times as on clear "dry" days.

And this brings us to remark that we are more than barometers; *that* only records the weight of the atmosphere, showing the air lighter previous to and during a storm. Notice how the smoke from our chimneys, which rises in clear weather, falls during a damp, rainy day. It falls, not because the smoke is heavier, but because the air is lighter.

But why should the weather thus affect our spirits and our general physical system? Perhaps at some future time we will try to show it is on account of the electrical condition of the atmosphere.

ATTEND TO THE SURROUNDIGS OF DEAD TEETH.

Proper attention to the surroundings of dead teath is sometimes quite as important as the successful treatment of the teeth. Often we are discouraged at the result of our work on a dead tooth when we have really succeeded, so far as we have gone. Our fault has been in neglecting proper attention to its surroundings. An abscess has caused necrosis of the alveolus, or perhaps we have its ulceration. For complete success, all this must be removed and a healthy granulation induced that shall fill the void with new, healthy bone. Time was when such a result would have been called a miracle; now it is a daily success in many dental offices. When a boy, we had two lower incisors killed by a blow. For years they were a trouble. They finally became so loose they toppled over "in biting" a piece of peach. At any time, through those many years of annoyance, what a price we would have given to have had the abscesses on their roots removed, the ulceration of the alveolus cured, and the teeth made firm in their places by a new growth of the surrounding bone. But no one responded to our call, and they were lost.

Of course, the first operation is the removal of all diseased bone by burs and scrapers, and cleansing of the parts first with an injection of salty water, then of dilute carbolic acid. Filling the pocket with a piece of soft sponge, a half-hour's rest may be given. Then, after removing the sponge, if another piece is put in saturated with aromatic sulphuric acid, the case may be dismissed till the next day. Still better, perhaps, if the patient is directed to renew the application of the acid once or twice during the interval. At the next sitting, after cleansing the pocket of pus, apply peroxide of hydrogen, first through a syringe, then by saturating a piece of soft sponge, of a size to fill the pocket, and again dismiss the patient till the next day. If after this there is any tendency to the formation of pus, repeat the aromatic sulphuric acid. If not, stick to your peroxide of hydrogen—though some would alternate it with iodoform. By this time, if your treatment is successful, you will find small granulation of bone. Disturb this as little as possible. If, say twice a week, the pocket is gently cleansed with dilute sulphuric acid, and a piece of fresh, soft sponge is returned saturated with peroxide of hydrogen, the granulation of the bone will be found continually increasing, so that each time a smaller piece of sponge will be required, till finally nature will continue the process without your interference. Don't mistake the albuminous matter covering the walls for pus; this is the best evidence of healthy progress in granulation. As new bone fills the pocket, the gum will grow over it.

Why should not the alveolus be thus capable of reproduction? We remember reading of a case, long since reported to one of our

journals as a curiosity, that is confirmatory of extensive reproduction of the alveolus. A lady, by the poisonous effects of blue mass, lost all the lower alveolus forward of the first molars on each side. For years the sloughing dead bone was allowed to remain, till, gradually, nature actually threw it away. Then, to keep the chin in proper position, and the tongue from protruding, she kept a roll of linen rags where the bone had been. Gradually she found less use for her roll, for the natural ridge seemed to be rising. Consulting a dentist, he discovered a new growth of beautiful bone. This continued till the full ridge was restored.

The spray from an atomizer is coming more and more into use. Why a spray of chloroform or ether should have more penetrating effect to chill or to anæthize a part, than the same amount forced on the surface from a syringe in the form of fluid may not be demonstrable, but it is a fact. Cold water thrown on an acute inflamed tissue from an atomizer has quite as marked superiority over water thrown with equal force from a syringe. So in cleaning a cavity, difficult of approach and complicated in structure, as the ear, the snyderian membrane, and the antrum, a spray is much more efficient than a stream. A spray thrown on a malignant tumor of complicated foldings, will much more thoroughly clean every sack and pit and fold, of pus and noxious salts than a stream of water thrown with equal force. Surgeons have often found that by the force of water for this purpose, congestion of the part is produced. Its constringing effect seems to close the openness of the tissue so that water cannot penetrate to all parts. This is not so with the spray.

Dyspepsia is not the least evil, even among children, resulting from the decay and premature loss of the deciduous teeth. How many children gulp down their food unmasticated because "the teeth hurt so." And, from evil advice, they are prematurely removed "because better teeth will take their place." Then the poor child has to complain for want of sufficient teeth to chew on. By all means, let us not only save the deciduous teeth but see that they are kept in good order. Then we can consistently urge children to properly masticate their food, which is of so much importance.

God grant that we may so live that it cannot be truthfully said of us what was said of a public man the other day, when I announced his death: "Well, the world is better off for his going."

Bro. Atkinson sends us an essay on "Preparation of the mouth for the insertion of teeth of substitution." The ITEMS is hardly the place for it. A part without the whole could not be understood, and the whole is too unfathomable for common readers. It should have a place in a strictly scientific dental journal. Why hav'nt we one? This essay exemplifies its need. For instance, take this paragraph :—

"The consciousness is awakened in the emotional, ideational, consensual, motor, excitor and voluntary degrees of automatism that turns the attention of the consciousness to the stored knowledge of the functions and factors of functions in coinciding and opposing degrees, thus appearing as will, which has two modes. The first mode of stored knowledge is spontaneous or unconscious-consciousness, and involuntary, or sub-will. The second is the act of awakened purpose, or will proper."

Ordinary readers would hardly know what to do with such deep truths, specially as light shed on "Preparation of the mouth for the insertion of teeth of substitution." Have we not scholars among us? —enterprising scholars, who will combine to establish a medium for shedding on the profession the profound, and the far advanced, thoughts of our really scientific dentists?

Dental Caries, by Henry Sewill, M. R. C. S., L. D. S., England. This is a treatise containing papers read before the British Dental Association. It is difficult here to present a resume of them. The better way will be to give copious extracts in the body of the ITEMS. A specimen will be found in this number; others will follow.

The Dental Department of the University of California is getting along nicely.

Two Blunders.—In the November number: The Promotion of Osseous Development, by Dr. Geo. Watt, was credited to the *Register*. It should have been credited to Dr. Watt's own magazine, *The Ohio State Journal of Dental Science*. In December ITEMS, "Gas and the Ohio Dental Journal" should have read, *Gas, and the Ohio Dental Society*. Our report came from the *Ohio State Journal*, but this newspaper must not be confounded with the prince of dental journals, so nearly of this name. We would not care to say this if all in this report was creditable to the dentists of Ohio.

If Brother Watt was not a good natured old gentleman, we should expect to be anathematized for such blunders, but we doubt if he knows even how to scold. We will, however, be very careful not to give him occasion to again.

Miscellaneous.

SCIENTIFIC RECORD OF THE ORIGIN OF MAN.

JAMES R. NICHOLS.

Science must be regarded as a dumb oracle when consulted with regard to the genesis of man. Positive knowledge begins with the study of the embryo, a principle brought into existence with his advent. The first surprise which startles the investigator is the extreme minuteness of the physical point from which man commences. There is here apparently a marvellous exhibition of inadequacy of means to ends. That man, proud of his physical stature, and of his superiority over the animal kingdom and the forces of nature, should start from ova infinitely smaller than the egg of the smallest bird, is a consideration well calculated to arrest the attention. The human ovum is so small that it is covered by the point of a common pin, and the microscope must be taken in hand for its study. The calcareous shell of the egg of a humming-bird has sufficient capacity to hold enough of the human life germs to people a city, and the shell of the egg of the ostrich to cover a continent with inhabitants. It is well to remember in considering the minuteness of man's material beginning, that the egg itself is not the *germ*, or the point where life begins; the egg the vessel which holds it. The study of the germ brings us face to face with molecules of matter held in a single cell, so minute that the highest powers of the microscope are scarcely adequate to reveal it.

The germinal principle of the egg is only gross matter—oxygen, nitrogen, hydrogen, etc.—and, left to itself, is as inert as molecules of silex or calcium. It requires the juxtaposition of two forces to to bring to view the miracle of life. A female barnyard fowl, living apart from those of the opposite sex, will fill her nest with eggs, but the maternal warmth, however zealously conferred, does not result in filling the barnyard with chicks. There is inherent in man the almost divine power of conferring on a few molecules of matter, so small as to be entirely beyond the reach of the unaided eye, his own living identity. On a point infinitesimally small the physical characteristics and mental peculiarities of two distinct families are indelibly stamped, and this touches so closely on the border land of miracle that we are scarce able to discern any intervening space.

Heredity is so wonderful in all its aspects, and extends to such minute points, that we are indeed bewildered by its study. A distinguished scientific friend, in conversation on this subject, called my attention to the raised lines and grooves on his thumb-nail, and stated that the same lines and grooves were distinguishing marks on the right thumb-nail of his father, grandfather and great grandfather, and probably progenitors still more remote. They could not be effaced, for when removed by the use of a file, the succeeding growth presented the characteristic marks in strict conformity to the hereditary impress. Corresponding minuteness is observable in the mental impress, and throughout life we are constantly startled by modes of thought, methods of expression, capacities and incapacities, which closely resemble those belonging to parents and grandparents.

A child with its lungs inflated with air is regarded as a new being, although life began before it was brought in contact with the external world. By a new being is meant a new human machine, which would never have existed had not two adult individuals set in motion a train of vital activities, under the guidance and control of nature's laws. The new being is perhaps the most perfect example of helplessness that can be conceived of, and its first demand is for food, which it has no power of obtaining. The atmosphere does its part of necessary work in supplying oxygen, and respiration goes on spontaneously, and the maternal instinct, supported by love, supplies the needed nutrition. Thus commences the physical career of man, and henceforward the whole work of material life consists in supplying the proper forms of organic matter to promote growth and repair waste. The little mass of organized matter which has newly come into the world grows as an animal or tree grows, by the multiplication of cells, and the cells are formed by the material placed in the organs of digestion and assimilation by the mother. It is necessary that the elements of nutrition should be held in suspension in much water in order that they may be digested by the feeble stomach of the child, and hence a distinct class of organs are supplied in the female by which this food is manufactured. The lacteal secretion consists of common water about eighty-six parts, and the fourteen parts of solids consist of every material in right proportion to form the structure of a perfect physical man.

The child, till the teeth are formed and the work of mastication commences, is built wholly from the food supplied by the mother; but if through some defect of organization the maternal food is not furnished, the cow, goat, and other animals can supply the want. Thus, when resort is had to the lacteal secretion of the cow, it is the food of the animal which builds the body of the child; the hay and grain of the cow is transformed into human flesh, and every molecule of the body of the "precious baby" has passed through the animal organism from hay and grain.

These considerations bring to view the close relationship we sustain secondarily to animal life and primarily to the vegetable world.

HUXLEY gives the following table of what a full-grown man should weigh and how this weight should be divided. Weight, 154 pounds, made up thus: Muscles and their appurtenances, 68 pounds; skeleton, 24 pounds; skin, 10½ pounds; fat, 28 pounds, brain, 3 pounds; thoracic viscera, 3½ pounds; abdominal viscera, 11 pounds; blood which would drain from body, 7 pounds. This man ought to consume per diem: Lean beefsteak, 5,000 grains; bread, 6,000 grains; milk, 7,000 grains; potatoes, 3,000 grains; butter, 600 grains, and water, 22,900 grains. His heart should beat 75 times a minute, and he should breathe 15 times a minute. In twenty-four hours he should vitiate 1,750 cubic feet of pure air to the extent of 1 per cent. A man, therefore, of the weight mentioned, ought to have 800 cubic feet of well ventilated space. He would throw off by the skin 18 ounces of water, 300 grains of solid matter, and 400 grains of carbonic acid every twenty-four hours, and his total loss during the twenty four hours would be 6 pounds of water and a little above 2 pounds of other matter.

CHRONIC DISEASE.

PROF. L. C. INGERSOLL, KEOKUK, IOWA.

Any acute form of disease may become *chronic*, which means that change in the symptoms of disease which is brought about by time. Mere *continuance* of a disease brings about a change of functions and of symptoms. It is a kind of adjustment of the functions to the diseased condition. It is a physical *toleration* of evil.

Chronic disease can best be studied in comparison with the acute form. When disease takes on a decisive and active form, causing intense physical pain and mental excitement, running rapidly through the inflammatory processes, it is called *acute.*

Acute disease usually compels attention, excites alarm, and makes demand for a doctor or a dentist. With the chronic form comes a relaxing of physical pain and mental disquietude, and doctor and dentist are put off as readily as an "evil day."

The *conscious recognition of pain* is one of the most cognizable symptoms of acute disease. On the other hand, one of the chief characteristics of chronic disease is its freedom from pain. Hence it is that we may carry about in our bodies for months, or even for years, dangerous forms of disease unconsciously. Our worst enemies lurk.

In acute disease, the nervous system and the organic functions make their normal response to irritants, which is great uneasiness and pain. But in the chronic state, by long continuance of the disturbing cause, that which was before an irritant is such no longer; the nervous system does not make its usual response.

Take an example. The dental pulp when first exposed is greatly irritated by contact with the atmosphere, with saliva, and with particles of food—hot and cold drinks cause intense pain. By continued exposure, that is, by coming into the chronic state of inflammation, it tolerates these external irritants without pain. The tooth ceases to ache; the contact of the atmosphere and of food no longer excites pain; the patient considers the tooth *well,* and in condition for immediate filling; the dentist, too, is sometimes deceived into the same opinion.

Chronic disease may at any time return to the acute form, and manifest all its earlier symptoms of intense pain.

If to this condition of the dental pulp the dentist applies his remedies and causes all pain and uneasiness to cease, he may think that he has effected a cure, that all inflammation has ceased, and that the pulp is in its normal condition, when he has only brought it again into its chronic condition of painlessness and morbidness. If he be deceived into the idea that the tooth is now in a condition for "capping" and filling. A few months, and possibly a few days, will expose his error.

Many of the so-called "cures" of abscess are of the same sort. In the acute form, it gives unsufferable pain. In the chronic state, it *may* exist for years without pain, yet by exposure in damp and chilly weather, it may return to the *acute* condition, when some uneasiness, or even severe pain will be felt, depending upon the constitutional diathesis of the patient, and the pronounced character of the abscess.

If in these recurrent attacks, general treatment be resorted to,

and the inflammation subsides, the condition again becomes chronic and painless; the case is apparently cured, but *only* so to the unskilled diagnostician.

The condition is a deceptive one, and like all cases of chronic disease, it brings the pleasing hallucination of a *cure*, while disease still lurks in its hiding place.

"Bluing" Instruments.—All bluing is done, after polishing, simply by heating. The polished article is laid in a bath of hot sand or ashes until it turns blue. Then let it cool in the air, or cool it in water. If the article is of steel and has been hardened, the bluing will bring it to a spring temper—that of saw blades and case knives and wood firmer chisels.

Collodion.—If a plate of glass be covered with a coating of collodion—after it has dried—a sheet of printed paper placed upon it and rubbed over with the hand will impress the letters upon the collodion, which will remain visible after the collodion has become perfectly dried. The impression is best seen by transparency and with reflected light; if the impressed surface be breathed upon, the letters will appear bright upon an opaque ground.—*Pharm. Zeitung.*

I vulcanize in steam, always now using my "whiting." The way is to elevate the flask in the vulcanizer by putting under it a ring of tin some two inches high, and putting only water enough to come up partly to the top of the ring.—E. O.

Benzine, Naphtha, and Gasoline. A. The names mentioned are given to products of the distillation of crude petroleum coming over at different degrees of temperature, and consequently they vary in their specific gravity thus: Gasoline is the lightest mentioned, and has a density of 95° to 80° Baume, naphtha 80° to 65° Baume, and benzine 65° to 60° Baume.

MAKE a hole in a piece of tin and put on it a little glycerine, and see what a nice microscopic lens you have. The larger the hole the better, if the glycerine remains suspended in it.

Case Hardening Small Tools.—It is said that the engravers and watchmakers of Germany harden their tools in sealing-wax. The tool is heated to whiteness and plunged into the wax, withdrawn after an instant and plunged in again, the process being repeated until the steel is too cold to enter the wax. The steel is said to become, after this process, almost as hard as the diamond, and when touched with a little oil or turpentine the tools are excellent for engraving and piercing the hardest metals.—*Scientific American.*

This was my way of hardening the points of excavators, etc., for many years.—[ED. ITEMS.

READY FOR ANY HONEST WORK.

A recent writer defines "worry"—a trouble which makes many people sick, and even some to die — labor done without faith. He means by this, efforts made without confidence in the success aimed at. There is a world of truth in the motto, "Courage, always courage!" A successful man who overheard a less sanguine person drawl out, "I wish I *could*," turned upon him suddenly with the words, "Say I *will*, and you can." That is what the energetic man had proved in his own experience, and what many a languid individual might prove, too, if he would only once wake up. "Our doubts," the great poet has it, "are traitors."

The passengers and idlers in a certain street in New York were once upon a time amused by the proceedings of a poor fellow whom the police did not interrupt, though his movements gathered crowds, who stopped to look on and inquire. They went their way, admiring a persistence which almost argued insanity. The man had applied at the door of a store for assistance. "You are strong and able," was the answer, "why don't you go to work?" "Work I would gladly, if any one would give me work to do." "Will you do a day's work if I give you a day's wages?" "Try me," was the answer. "Well, take that brick—put it on the curb at the corner of Nassau street. Pick it up again and earry it to the corner of Park. There lay it down. Take it up again and carry it back. Repeat the walk until morning hours are over, and I will pay you a day's wages." If the man who gave this apparently senseless direction imagined that the other would refuse the arrangement, he was mistaken. The man took him at his word, plodded on through a long summer's day, and received not only his money, but the applause of the crowd, quite as well bestowed as those upon the victor in any walking match.

If he had "worried" over such questions as "What is the use?" he could not have done it. His aim was to honestly earn a day's wages, and he accomplished it. It was not, to be sure, a very ambitious purpose, or a very dignified employment of muscle without mind. But it was done without "worry," and he survived that day and provided for himself food for the next. And it is safe to sav that man got around all right in other employment. He was a philosopher in humble attire, capable of teaching many a more pretentious individual with ample means, one great secret of life. We have only one day at a time to live in, and it is never worth while to shorten the work of that day, while we lengthen the hours in weary speculations as to the utility of any honest pursuit, or in doubts as to results. "Meeting trouble half way" is, in the timid sense, even more foolish than "dropping buckets into empty wells, and growing weary drawing nothing up." The world and its doings are made up of trifles, any way—some sad, some glad, and others foolish. But any honest folly which pays is better than worry, which is usually only compensated, when the best comes, or the worst is over, with the reflection, "What a flat I was!"—*Phila. Ledger.*

A Cheap Perfume.—Mix 1½ fluid ounces oil of lavender, ½ fluid ounce oil of rosemary, 1 fluid ounce oil of lemon, and 20 drops oil of cinnamon with 1 gallon alcohol.

A PUZZLING QUESTION.

How many apples did Adam and Eve eat? Some say Eve 8 and Adam 2—a total of 10 only. Now, we figure the thing out differently. Eve 8 and Adam 8 also—total, 16. And yet the above figures are entirely wrong. If Eve 8 and Adam 82, certainly the total will be 90. Scientific men, however, on the strength of the theory that the antedeluvians were a race of giants, reason something like this: Eve 81 and Adam 82—total, 163. Wrong again; what could be clearer than if Eve 81 and Adam 812 the total was 893? If Eve 811st and Adam 812, would not the total be 1,623? I believe the following to be a fair solution: Eve 814 Adam, Adam 8124 Eve—total, 8,938. Still another calculation is as follows: If Eve 814 Adam, Adam 81242 oblige Eve—total, 82,056. We think this, however, not a sufficient quantity; for though we admit that Eve 814 Adam, if he 8181242 keep Eve company—total, 8,082,056. All wrong. Eve, when she 81812 many, and probably she felt sorry for it, but her companion, in order to relieve her grief, 812. Therefore, when Adam 8181424ofy Eve's depressed spirits. Hence, both ate 81,896,864 apples.—*Green's Fruit Grower.*

A Jumping Bean.—There is a bean which grows on a tree in Mexico that exhibits the curious instinct of motion as soon as it falls to the ground. It skips and whirls round and round, continuing its erratic motions for long distances. Sometimes hundreds of them will be seen going in all directions; not forced by the wind, for they often go against quite a breeze; and their motions are not merely down declivities, for they are sometimes seen actually going up hill. With many this is incredible, and with it who have repeatedly witnessed it, is a great mystery. It is ascertained to be due to the peculiar instinct of a worm which inhabits each bean—or nearly all of them—a wise provision of Providence to propagate this species of plant in various distances from the parent tree. As the worm comes to maturity it eats a large cavity in the bean, and as soon as it falls from the tree it gives motion to the little ball by drawing itself up into a close coil, and then suddenly uncoiling in such a way as to strike itself against the upper part of the cavity it occupies. The beans thus skip and roll along the ground till they lodge in some hole where they are covered with earth by the first rain.

Extraction of bee stings.—Immediately on being stung by a bee, place the hollow barrel of a key round the sting and press until it begins to hurt. On removing the key the sting will be found lying outside the puncture it has made and inside the ring formed by the pressure of the key barrel. All pain ceases at once, no swelling takes place, and in a few minutes it is difficult to find again where one has been stung.—*San Francisco Bulletin.*

The best Cure for Corns: Properly fitting shoes. A New York City Judge who came to the United States when a young man, once declared he never had any corns till he came to this country, because he never had any shoes to wear before.